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NATIONAL ESTUARINE POLLUTION STUDY. PROCEEDINGS OF THE ALASKA PUBLIC MEETINGS HELD AT JUNEAU, ALASKA ON JUNE 11, 1968, AND ANCHORAGE, ALASKA ON JUNE 13, 1968

Federal Water Pollution Control Administration
Portland, Oregon

1968

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PROCEEDINGS

of the

ALASKA PUBLIC MEETINGS

NATIONAL ESTUARINE POLLUTION STUDY

FEDERAL WATER POLLUTION CONTROL COMMISSION

June 11, 1968
Juneau, Alaska

June 13, 1968
Anchorage, Alaska

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FOREWORD

The public meeting transcript which follows is an important part of the National Estuarine Pollution Study. In the Clean Waters Restoration Act of 1966, Congress directed the Secretary of the Interior to conduct a study of the Nation's estuaries and to submit a report by November, 1969. The report is to include recommendations for a comprehensive national program for the preservation, use and development of the estuaries, and the respective responsibilities which should be assumed by Federal, State, and local governments, and by public and private interests. Jointly sponsored by the State of Alaska and the Northwest Regional Office of the Federal Water Pollution Control Administration, the meeting provided an opportunity for all interested individuals and organizations to express their views on management and development of Alaska's coastal zones.

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JUNEAU MEETING

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PART I

ORAL STATEMENTS
PRESENTED AT JUNEAU
ALASKA, JUNE 11, 1968

MR. E. K. DAY

We'll try to get the meeting underway now. We are a little late already and have a lot of ground to cover.

I am E. K. Day, Director of the Alaska Water Laboratory of the Northwest Region of the Federal Water Pollution Control Administration.

I want to extend a hearty welcome and express my sincere appreciation to all of you who are taking time to attend this hearing and express your views on this subject which is of vital importance, not only to Alaska, but to the whole nation.

Although the meeting is sponsored by the Federal Water Pollution Control Administration, it is your meeting and it is your views that we want to hear and understand, and to document. The panel here at the table is not here to pass judgment on your views or to cross-examine you. Members of the panel from time to time, however, may ask questions of a speaker in order to clarify a point or to guide the discussion to bring out views on some important aspect of the subject. I would now like to introduce the panel members.

First of all, our co-chairman for the hearings, Secretary of State Keith Miller, representing Governor Hickel. Mr. Dale Wallington, Deputy Commissioner of the Alaska Department of Natural Resources was supposed to be here, but hasn't shown up yet. We'll give him the seat next to Mr. Miller when he shows up. And, next, Mr. Al Wastler of our Office of Estuarine Studies in Washington, D. C., which is responsible for the direction of the National Estuarine Pollution Study.

And, next, Mr. John Vlastelicia of the Technical Programs Staff of our Northwest Regional Office in Portland, Oregon. Mr. Vlastelicia is our Regional Coordinator for the National Estuarine Pollution Study.

Most of you already know the background and the specific purpose of this meeting. For those of you who may not, let me summarize it briefly.

The Congress has recognized the need to protect our estuaries. In the Clean Water Restoration Act of 1966, the Congress directed the Secretary of the Department of the Interior, in cooperation with the many public and private interests concerned, to conduct the National Estuarine Pollution Study and submit a report by November, 1969, which would include, and I quote, ". . . recommendations for a comprehensive national program for the preservation, study, use and development of the estuaries of the Nation, and the respective responsibilities which should be assumed by federal, state and local governments and by public and private interests." End of quote.

Specifically, it calls for -- and again I quote -- ". . . comprehensive study of the effects of pollution, including sedimentation, on fish and wildlife, on sport and commercial fishing, on recreation, water supply and water power and other beneficial purposes. Such study shall also consider the effect of demographic trends, the exploitations of mineral resources and fossil fuels, land and industrial development, navigation, flood erosion and control, and the use of estuaries and estuarine zones . . ."

The responsibility for coordinating the study was assigned to the Federal Water Pollution Control Administration. This is only one of a number of such hearings being conducted throughout the country.

The following approach is being used in making the study:

1. The estuaries themselves are being examined. A composite description of the national estuarine system will be made in terms of what it is, how it functions, and how it has been damaged by pollution.

2. The social and economic pressures on the estuarine system are being studied. Resource use, and economic and social value of each use will be documented to establish the relative importance of these factors to the estuarine system.

These first two phases of the study will provide an "Estuarine Register" -- a necessary base for a management plan.

3. On the bases of these studies, recommendations will be prepared for submission to the Congress. The recommendations will incorporate all important environmental

social, economic and political factors -- and will, in essence, be a recommended management plan -- describing the estuary system of the nation and proposing the management system of authorities and responsibilities for their development and beneficial use.

The study is a big task and involves input from a number of other agencies and organizations. Perhaps of greatest importance, it involves close cooperation and input from coastal states.

This, in brief, is the how and why of the National Estuarine Pollution Study from a Federal standpoint.

The fact that you are all here indicates awareness of the importance of our estuaries as a national resource. I am sure that all of you are even more aware of the importance of our estuaries in Alaska and the vital importance in making the right decisions now as to how these resources shall be managed to provide for their greatest beneficial use. In Alaska we are fortunate to have a large percentage of the marine estuaries of the United States and we are even more fortunate that they are as yet relatively unspoiled. In recent years we have seen many estuaries in our nation lost to beneficial uses through pollution, conflict of interests, and lack of effective management. Many of them have suffered irreversible effects of man's activities.

In Alaska, because of its many estuaries, because the characteristics of the estuaries are different, and because of the present state of development of Alaska, this study to determine how the estuaries will be managed is of extreme importance. In Alaska we still have a chance to do it right, but there is no time to waste in making the right decisions and taking the right actions. The Congress has very wisely asked for recommendations before it legislates. It is important that your views be made known. And this is the reason for these hearings.

Now, I'd like to let Secretary of State Keith Miller, serving as co-chairman of the hearings, take over to express the State's views.

SECRETARY OF STATE
KEITH MILLER

Thank you, E. K. My remarks will be very brief. The State of Alaska recognizes the need for wise management and protection of it's water resources and we also recognize that this management policy will be dictated to some degree by Federal laws and regulations. Alaska is in the unique position of being able to avoid many of the pitfalls and mistakes and sins of omission committed by many of the states in the Lower '48. However, the State of Alaska does feel that this management policy should take a realistic approach as regards its future and the present economic development of Alaska.

Now, you didn't come here to listen to us, so with that I will turn the meeting back to Mr. Day and we'll continue on and listen to your views. Thank you.

MR. E. K. DAY

We have what, about nine people who have indicated that they wish to make statements here tonight. We are going to sort of mix these up as to individuals expressing their own views, representing various organizations in the State and industry and in our Government.

First of all, we'd like to call on Dr. Norman Riddell representing the Alaska Sportsman's Council.

MEMBER OF THE AUDIENCE

Mr. Day, if I may, Mr. Boddy was to represent us tonight and due to the late arrival of the Princess Pat, he is busy washing somebody else's dirty linen at this time. And so if we could delay our statement until later, maybe he'll be here. If he is not, then I'd like to make a statement at that time.

MR. E. K. DAY

We hope the Princess Pat arrives on time. If not, we'd be pleased to hear from you. Well, may we then hear from Dixie Baade, representing the Alaska Conservation Society.

MRS. DIXIE BAADE

Ladies and gentlemen, I am Dixie Baade and I am representing the Alaska Conservation Society. I have a fairly lengthy presentation, but I will just read our summary. /Ed. Note: See page 81 for complete text/

We believe that the importance of the estuaries in Alaska are particularly their value for the production of phytoplankton for the source of all of the various organisms that in turn are the food for the commercially valuable resources of the sea. Our crabs and our clams are produced and harvested there and they are also the nursery for the shrimp, and in addition to being the nursery, the whole shrimp industry -- Petersburg and Wrangell -- depend on the estuaries of the Stikine River.

The estuaries are also the feeding and the resting grounds for the countless number of shore birds and water fowl that come through here by hundreds of thousands every spring and in the fall. And they are also very valuable for recreation and also for their scenic values.

As you all know, we already have a certain amount of pollution and other activities that are damaging the estuaries in Alaska, and as was stated at the Clean Water Institute in Ketchikan, our estuaries, the same as our other waters, are largely in an unspoiled condition because of the lack of population pressures and the lack of industrialization. We can't take any credit at all for any planning.

We also have some serious threats to our estuaries. Chief among these threats, of course, is municipal pollution

Every house and every town on the whole waterfront that has a sewer system at all is dumping the untreated waste into whatever waterway it is located on.

In the wood products industries we have two pulp mills dumping both solid waste and sulfite waste liquor into Ward Cove and Silver Bay. In Ward Cove we also have the problem of an inadequate flow of water over the pulp mill dam in dry weather and I understand that there is a detergent problem in the Silver Bay area.

We have sawmills dumping bark and rejects which in turn wash up onto the tidelands and into the estuaries where they decay and then in turn are washed into the waterway as organic debris with a high oxygen demand.

We have a problem of logging camps in our small bays and estuaries where there is an introduction of domestic pollution into previously unspoiled waters. There is another problem of log storage areas and I don't feel that anything is known of the impact of log storage on the estuaries. Whether there is mechanical damage or whether there are mechanical changes.

There are poor watershed practices already. In addition to lack of protection of some of the streams -- and I should say that it is impossible to separate watershed management from the estuaries. What happens on the watershed has a very important bearing on what happens in the small bay into which the stream may empty. Fortunately there is a prohibition of the use of DDT and the other biocides by Federal agencies, but I don't believe that we know enough yet about -- well, malathion, I know, is being proposed for one project at present. I don't believe enough is known about what happens to some of these things when they do get into the estuaries.

And we have the seafood industries who are a major polluter. Clean water is probably the most important thing on which the seafood industry depends and yet they are one of the major polluters of our waterways. And, of course, the oil industry has been in the news quite prominently with the pollution from tankers, from pipeline breaks and from around the drilling rigs.

And then there is the proposed threat now if they start the strip mining of coal in the Bering River area. And we have our share of dredge projects from one end of the coast to the other.

We feel that the best use of our estuaries is for the purpose for which they were evolved. We shall preserve what we cannot replace and there are no areas on the earth's surface with comparable biological functions.

Recommendations for the protection of the estuaries;

first of all will be implementation and enforcement of Alaska's Water Quality Standards; Improved logging practices and improved watershed use, and we feel that there should be basic biological studies by an independent agency with no vested interest in the results that are obtained. We feel that a good approach to estuarine management is that similar to that proposed in H.R. 25 that was introduced by Representative John Dingell of Michigan in 1967, I believe. This would require a permit from the Secretary of the Interior in addition to one from the Corps of Engineers for any dredge and fill projects or other activities that would effect estuarine resources. And we also feel that unless studies are soon completed and action is soon taken to halt the activities that are now already damaging our estuaries, we'll soon have the same deplorable condition in our waterways that we have in the other states.

And we'd like to have this included in the hearing record at this time.

MR. E. K. DAY

Thank you, Mrs. Baade. I'd like to ask that you give a copy of your written statement to Mr. Jones, our Court Reporter. Each of the speakers, if they have a written statement, please furnish a copy to Mr. Jones.

Now, I'd like to call on Mr. Ben Hilliker of the

Alaska Department of Fish and Game.

MR. BEN HILLIKER

Mr. Day, Mr. Miller, ladies and gentlemen, this evening it is my pleasure to address this group on a matter that is critically important to the fish and game resources of the State of Alaska. The impacts of pollution in Alaska's coastal waters. The following remarks will be confined to matters dealing with estuarine pollution from a fish and game point of view.

Alaska is in an enviable position relative to quantity and quality of the estuarine environment. This state has the largest, as well as the least polluted and unaltered estuarine area, of any state in the Union. The Department of Fish and Game sincerely hopes that this, and similar meetings around the nation, will establish the basis for comprehensive research studies and subsequent policies that will help to maintain these vital estuarine environments.

The value of an estuary is dependent upon many factors. Of little doubt however, is that an estuary polluted, and fouled beyond use for either recreation or industry, for fish, shellfish, and wildlife, would be of little value to anyone. The literature contains descriptions of many such estuarine areas around the nation.

From a commercial fisheries' point of view, in 1966 the estuarine environment in Alaska produced in excess of 197,000,000 million dollars wholesale value of commercial fisheries products. In addition, an estimated 1.5 million fish were taken and utilized for subsistence purposes. Of a more intangible, yet highly significant value in the estuarine areas, are the recreational usages by sports fishermen and hunters. Last year 75,000 sportfish licenses were purchased by Alaskans, or visitors to Alaska. In addition, Alaska produces 25-30% of all the ducks and geese in the Pacific flyway each year. We, as well as our coastal neighbors to the south, are dependent upon Alaska's high quality estuarine nesting, resting, and feeding area to maintain this extremely valuable wildlife resource. Other wildlife species totally or at least partially dependent upon the maintenance of high quality estuarine environments are Sitka Blacktail deer, brown bear, and man species of fur bearers, expecially seal and seal otter.

Here then, from a fish and game point of view, is one value that an unpolluted habitat represents to the people of this state.

As I pointed out earlier, the estuaries of Alaska are now relatively unpolluted. As industries develop and our urban populations increase, this condition could change. At the present time a few Alaskan estuarine areas are threatened with worsening conditions if promptaction is not taken. Of special concern are the pollution problems in Cook Inlet originating with the petroleum industry, and the raw sewage contamination from the greater Anchorage area. Of lesser significance are pollutants from the pulp mills at Ketchikan and Sitka, and the offal from fish and shellfish processing plants throughout the state. Unless these, and the many other smaller, more isolated cases of pollution, are remedied in the most expedient manner, then Alaska too may someday be faced with the awesome task of cleaning up, and rehabilitating estuarine areas that it could not afford to lose to begin with.

In evaluating the results of pollution studies from other states, it appears that all to often 'a little pollution' has been tolerated and usually goes unnoticed. However, once the pollution problem becomes noticeable and therefore objectionable, in most instances it has gone to far and irreparable damage to the environment has occurred. As a result, usually costly programs and much time must pass in order to reclaim the areas lost to pollution. This need not, and we hope will not, occur in Alaska. We are now collectively aware of the problems that pollution cause. Awareness and the inclination to prevent them are a big step forward in pollution control.

The future of Alaska's coastal zones, for suitable industrial, recreational fish, wildlife, and esthetic uses, is at best uncertain. Industrial development of various kinds is a certainty. Petroleum and related petro chemical industries are expanding. Timber and pulp production undoubtedly will increase. The uncertainty lies not in whether the coastal zones, or estuaries, will be used, but whether or not they will be used properly. We cannot afford any program which allows just 'a little pollution' to occur, or we too will undoubtedly face the same problems that much of the nation is faced with today regarding estuarine pollution.

The best use of our estuarine area is compatible use, neither all out industrial and domestic development or 'wildlife sanctuaries', as mutually exclusive entities are in the best interest of Alaska. Planned management, considering all resources, and all values economic, recreational, and esthetic, with the support of an informed public, is the program that will insure the best future use of our estuarine areas.

The system of estuary management that the Department of Fish and Game recommends, is one which recognizes the needs and requirements of all uses and users alike. The various departments of the State Government must shoulder the major responsibility in this role. In those waters such as lower Cook Inlet, and offshore areas beyond the three mile limit, plans, programs, and objectives should and must be a cooperative state-federal effort.

On those lands controlled or administered by bureaus of the federal government, in the future, as it has been in the past, a close working relationship between the state and federal government is imperative to effectively plan, conduct, and coordinate pollution control programs that the value of Alaska's estuarine areas so clearly represent.

That concludes the official statement of the Alaska Department of Fish and Game and we would like to express our appreciation for the opportunity to present our views for consideration in formulating the National Estuarine Pollution Study.

MR. E. K. DAY

Thank you, Ben. Would you remain on your feet just a little bit. I'd also like to go back to Mrs. Baade and ask the panel if it has any questions that they would like to address to either Mrs. Baade or Mr. Hilliker?

MR. T. A. WASTLER

I have a question of Mrs. Baade. You indicated that you thought watershed management was necessary, as well as management of the waters in the estuaries. Do you mean by this, management of the land areas surrounding the estuaries as well as the ---

MRS. DIXIE BAADE

Also surrounding an estuary, because at the present time where these logging camps are located in these smaller estuarine zones, at times there is logging taking place on the very top of the hill to the tideland and that is also bringing siltation. That is in the text of the paper, but I believe that that is definitely damaging to the estuary.

MR. T. A. WASTLER

All right. Do you have any thoughts on the basic responsibility for this management process, whether it should be local, on the State level or at the Federal level, or a combination thereof?

MRS. DIXIE BAADE

Well, most of the land on which these activities are taking place -- not all of them. Some of the worst has been on private lands privately, and the worst instance I know is south-east Alaska -- but, most of the land is already Federal land. It is in the Tongass National Forest. So, it would seem to me that it is their responsibility at the present time.

MR. T. A. WASTLER

And you also indicated some basic biological studies by agencies with no vested interest ---

MRS. DIXIE BAADE

I believe the Federal Water Pollution Control Administration would qualify.

MR. T. A. WASTLER

We have enough responsibility at the moment. How about the Bureau of Commercial Fisheries, say, or the Alaska Department of Fish and Game?

MRS. DIXIE BAADE

If it were set up legislatively with adequate funds and adequate provisions for enforcement. We have quite a few things now that are not being enforced. The Administrative Code has many provisions for the protection of our waters. Not necessarily of watersheds or estuaries, but we have many laws that are not being enforced at all with regard to the protection of the water quality.

MR. T. A. WASTLER

Thank you very much. That is all the questions I have.

MR. JOHN VLASTELICIA

Mrs. Baade talked about Alaska's planning and you, Mr. Hilliker, mentioned that you would like to see some planning begin to take place, particularly integrated planning between the various State agencies. And you suggest that the State should take the lead in providing and planning for development here, but do you have any feelings or ideas about how this might best be done when you do have different departments of the Fish and Game, the Conservation type departments, then an economic development department and so forth, how you would go about providing for an overall development plan at State level then?

MR. BEN HILLIKER

Well, I think one of the bases for the Estuarine Pollution Study is to determine what the problems are in all the estuaries of the Nation and when we come up with the bases for this study and the fact that having gone into it to determine what problems there are within the three mile limit, the responsibility will fall upon the State Department of Health and Welfare. The Department of Fish and Game fits together and works out plans, coordinates the activities, the research, and we no doubt will solve these problems. This is what I had in mind.

MR. JOHN VLASTELICIA

Do you think it would take, as was mentioned, a single agency with no vested responsibility or no vested interest, I think it the way it was put, in order to coordinate these things, or could it be done on an equal basis, or would there have to be one overriding vote?

MR. BEN HILLIKER

Well, I would say that I think that from the State level the Fish and Game Department cooperating with other agencies could cooperate with an overall agency, if there was such a thing, which would be coordinated on an overall basis. I am sure this would be compatible with the plans for the estuaries and pollution studies. It could be worked out.

MR. E. K. DAY

Thank you very much, Ben. Now, we'll continue with our mix-up here and call on Mr. O. A. Mason. I believe Mr. Mason is Technical Director of the Alaska Lumber and Pulp Company.

MR. O. A. MASON

My name is Orin Mason. I am Technical Director of Alaska Lumber and Pulp Company of Sitka. Alaska Lumber and Pulp Company operates a magnesium base dissolving pulp mill on Silver Bay about six miles from Sitka. Our mill uses the most modern methods available for recovery and burning of waste liquor, but still discharges some waste material into the waters of Silver Bay.

In 1957 a study of the waters of Silver Bay was made by the University of Washington and paid for by Alaska Lumber and Pulp Company. Based on the results of that study, limits were set on the quantity and quality of our effluent and were used as the basis for the issuance of our Permit to Discharge. The 1957 Water Quality Standards for interstate waters within the State of Alaska defined the maximum allowable effect of our discharge upon the receiving waters. We are guided in our operation by these two limiting factors. Our efforts are successful to the extent that the area in close proximity to our outfall is regularly and successfully fished by commercial salmon trollers. As a precaution against inadvertent damage, ALP regularly samples and analyzes the water from various areas of Silver Bay. Results of these analyses are available to any official body on request.

Although Silver Bay does not qualify as an estuary under definition in PL 89-753, we feel that our operation demonstrates that coastal waters of Alaska can be used under existing controls for industrial development without jeopardizing other legitimate uses. It also demonstrates that existing legislation administered by the State provides adequate protection for all coastal waters.

It would be a grave error to apply rules and regulations which are appropriate to more populous and industrialized areas to the State of Alaska. We are currently engaged in a determined effort to develop the state economically. To be successful, we must develop industrially using the raw materials available in the state. We must also make full use of all the natural resources available to us. The coastal waters, including estuaries, are one of the most important of these resources. Because of the relative inaccessibility of much of the area of Alaska, development will to a large extent be concentrated in the coastal areas. Here the bays and estuaries will provide access to the potential sites, recreation for the new population and a safe assimilative capacity for the wastes.

This does not mean that indiscriminate dumping should be permitted. If toxic wastes are involved or if and when the volume of waste exceeds the assimilative capacity of the waters, treatment is certainly indicated. But, treatment for treatment's sake is a luxury we simply cannot afford. Blanket demands such as "nondegradation" do more harm than good.

Intelligent use of Alaska's coastal waters must be based upon classification of individual areas to be carried out in those areas as the need arises. Possibly, as in the case of Silver Bay at the expense of the prospective user, but by an independent investigating body.

Finally, management of the coastal waters must be left in the hands of the state authorities. Federal participation should consist of a continuing audit of the quality of the developed waters unless and until that quality falls below those defined by the approved standards. In addition, in view of Alaska's small population in relation to its large coastal area, Federal assistance in cold water research and in staffing out of State run agencies should be considered.

MR. E. K. DAY

Any questions from the panel for Mr. Mason? Thank you, Mr. Mason. Now, I believe I saw Mr. Boddy come in. I understand, Mr. Boddy, that you have a statement for the Alaska Sportsman's Council?

MR. A. W. BODDY

Mr. Chairman -- chairmen, I should say. I am sorry I was late and it was not my intent. It was my misfortune to have to work for a living and that is the reason. I ask for your indulgence.

I am here this evening representing the Alaska Sportsman's Council, a State wide conservation organization. We do not have at this time a prepared statement. We have followed, of course, and participated in the various efforts to provide protection for our waters of this State, and we have followed very closely the estuarine problem. And at this time, Mr. Chairman, I would request respectfully to be allowed to submit a written statement at a later date.

/Ed. Note: See statement on Page 91/

MR. E. K. DAY

We'll allow, Mr. Boddy, fifteen days for anyone to submit a report, even though they do not present a statement here. They may present a written statement later.

MR. A. W. BODDY

I would for the record here at this time, Mr. Chairman, like to make an oral statement in regard to the position of the Alaska Sportsman's Council. We have only recently received a copy of the statement prepared by the Alaska Department of Fish and Game. We have reviewed this and we find that it is in our opinion a good analyzization and fair approach to a very, very important problem.

The Department is to be commended for their approach to this problem. It demonstrates that they have recognized their responsibility to the people of Alaska. And, also, I think it demonstrates and illustrates their willingness to work with not only other agencies in Alaska, but also with the Federal agencies that are involved in such a complex problem as we are faced with here and discussing tonight with regard to water pollution in estuarine areas.

I think that perhaps a good many of you are perhaps aware of the fact that Dr. John Buckley, who was formerly with the University, prepared quite a comprehensive report back in the early 1950's in regard to the value of our natural resources and he puts considerable emphasis on the value of our marine resources and also touched quite deliberately on the fact that we should make every effort to protect our estuarine areas of the coastal areas of Alaska because of the extreme importance to the continuance of one of the most valuable resources that we have. Not only in the State of Alaska, but also in the Nation as a whole and the world as a whole.

Dr. Buckley emphasised this completely and I think did a magnificent job and I will try to make a copy of this available to the Committee, if you do not already have one. I believe that his statements have been borne out and it certainly is becoming more and more evident that more and more we are going to become dependent upon the resources of the sea for a source of protein. Not only here in Alaska, but throughout the entire world.

Now, we realize that we have other resources in Alaska that contribute and will contribute in considerable amount to the welfare of the State of Alaska. We realize that we are going to have to utilize those resources. We feel in the utilization of the other resources we must have a fair analyzation of the total resources involved and that we should have a full consideration on the part of all of our State agencies, as well as the Federal agencies prior to making decisions as to whether we are going to sacrifice one resource over another.

Now, the Alaska Sportsman's Council, as a conservation organization, as a matter of record in this matter have adopted the multiple use concept of resource management. We realize that this does open the door, in a sense, as has been pointed out to us by some of our resource agencies and also other organizations dealing in resource management. Some of them are not at all convinced at the approach that we have taken to this as the most logical one. We feel that it is, because we feel that the Forest Service and the Bureau of Land Management here in Alaska, as well as our State agencies, are pretty well tied to this concept of resource management. And we feel that with an honest approach to this by the agencies, that everyone is going to have a fair shake in this whole management program.

I want it understood thoroughly that we are in strict assurance to the multiple use concept of the resource management, but we are going to be just as adamant about this when we feel there are areas in which perhaps a decision should be made to accomplish priority, one or another. And we also have such areas in Alaska -- and I think perhaps there are many in this room that are well aware of this. We feel there are many areas -- estuarine areas particularly -- that need to be studied. They need to be reviewed. And we are going to look and continue to look to the Department of Fish and Game at the State level and also other State agencies -- Department of Natural Resources; Department of Health and

Welfare, as well as our Federal agencies, for a thorough and complete analyzation and report to us.

I think this is the proper way to approach this matter and we are going to continue to work towards that end. Our record is pretty clear in this area, but I want it as a matter of record that this is our approach. We have supported legislation. We have supported it not only on a national level, but on a State level at the present time as members of the National Wildlife Federation, largest conservation organization of it's type in the world today. We have supported the estuarine bill and we are continuing to support the Secretary of the Interior in his efforts to assure that we'll have equitable applications of the law. Applications which will assure that we are going to have pure water, not only for domestic use, but for protection of our fisheries and other natural resources and full consideration to the other users.

Quite recently we received copies of the National Wildlife magazine. There is an article in here, gentlemen, which I think is worthy of everyones' consideration. It deals with the problem -- or one of the basic problems and one of the reasons we are here tonight.

This is authored by Wesley Marks, a quite well known individual, regarding the ecology and things that are pertaining to our estuaries and our problems of water management and water purity. This article is titled, "Suicide in the Shallows." I am not going to at this time to attempt to read this to you, but I would like to leave copies with you for your use. And I am sure that you will find it very interesting and I assure you that it is a very factual article. But, in short what he does point out is that the estuarine areas support forms of life and are quite important. And he also points out that we have some very definite, some very positive instances where we have had great damage done. An almost irreparable damage has occurred on the west coast particularly. And I hope that you will take careful note of his analysis of this and I am sure that you will find it very factual. I think we are all indebted to this young man for his timely utterances and presentation on one of the most important subjects that we have. And I do have some additional copies. If you would like, I could furnish you with at least five or six copies, or more if you need them. /Ed. Note: The article is reprinted on page 107/

MR. E. K. DAY

We'd like several copies.

MR. A. W. BODDY

I think in conclusion, gentlemen, that we would say at this time that we feel that there is a dual responsibility and when I say, "Dual responsibility," I mean a dual responsibility on the part of the Federal agencies involved in the management of the resources here in the State of Alaska, because at the present time we still have about nineteen percent or more of our land under Federal jurisdiction and Federal control. I mean also in using the word, "Dual," there is a dual responsibility -- and this is spelled out, I am sure -- I think you are all well aware of it -- that all of the agencies dealing with resource management here in the State would cooperate and work together in an effort to bring about a solution to this problem which will assure that we'll have a continuance of our natural resources, our fishery resources, our pure water and everything that we are all entitled to.

I am sure that also there is a need for understanding between organizations such as the one that I represent and industry, and I would like to make it public at this time that we are very desireous of sitting down and discussing this matter of pollution, this matter of estuarines, or any other matters pertaining to resources with any other user groups. And we have done that and we are always available and desireous of trying to work out a solution to the many problems that we know are going to develop within the next few years.

I think, gentlemen, that concludes our statement for this evening and, again, I appreciate the opportunity of appearing here. I am sorry that I was late and we'll present a written statement. You will have it within the time limitation as you have presented it. Are there any questions? I'd be glad to try to answer any.

MR. E. K. DAY

Any questions from the panel?

MR. T. A. WASTLER

I have one. I think, Mr. Boddy, you indicated that your organization supports the multiple use concept for estuarine management. Multiple use has to be decided by somebody. What do you feel should be the mechanism for deciding what multiple uses would apply in a particular area? Or have you any thoughts on that?

MR. A. W. BODDY

I think I can answer that question. We have already been involved in that here in Alaska and I think it is quite clearcut. Quite a number of years ago we had a question of usage in the Cordova area and this was prior, as I recall, to Statehood, but the multiple use concept of resource management was applied there and I think it was a wise decision. And I hope that all of those decisions can be as fairly considered and as equitable as that one was. There was a great deal of controversy which developed around the use of certain lands in that area. Whether it should be divided up into small tracts and disposed of, or made available on a lease basis as it was in the position to do, and the final analysis, after a considerable discussion on that and great deal of investigation, it was decided by all the agencies involved, including the United States Fish and Wildlife Service and the then Territorial Departments that were involved, that the highest use of this would be to leave it as it was because of the fisheries resources involved and the wildlife resources involved. I think there is a great demonstration of how it should be handled.

I think before a decision is made that there should be a fair evaluation -- a complete evaluation of all the facts and all the facts made known to both sides. There is usually at least two sides in a controversy of this kind. And make our choice on that basis. It is entirely possible that there will be occasions when more than one use can perhaps be made of an area and we are not going to argue that point, but when it comes to a point where there is a greater value -- a higher value and it can be demonstrated that it is in the interest of fisheries or in the interest of recreation or something of that nature -- or it is decided it is in the interest of economic development, then I think this is the fair way of approaching it. Does that answer your question?

MR. T. A. WASTLER

Yes, it does. Thank you very much.

MR. JOHN VLASTELICIA

This Cordova problem, what was it? An inter-agency problem between State and Federal agencies, or ---

MR. A. W. BODDY

Territorial. It was primarily territorial agencies and the State and Federal agencies. The Forest Service was very much involved in this and also the Fish and Wildlife Service were the two primary Federal agencies that were involved and, of course, it was a strong desire of a certain group -- a certain element of people in the Cordova area to change the usage plan of the area, which was the prime area in which the difference revolved around.

MR. JOHN VLASTELICIA

In the case where you would have not an inter-agency or two public bodies or different public bodies concerned here specifically, but where you might have some private use such as some industrial development that might change the values and the uses out there, do you think that there is presently enough agency control available to guide this to multiple use?

MR. A. W. BODDY

Well, we have present two responsible agencies when we get into it. Let's take, for instance, the areas of south-eastern Alaska. Primarily you are talking about the State of Alaska and the Federal Government. The Forest Service has the jurisdiction over the major portion of the areas of south-eastern Alaska because they are within the U. S. Forest Service jurisdiction and boundaries. Beyond that area, of course, you have the State with their tideland responsibilities and here is where we feel that you are going to have to have -- and then, of course, in some instances you will have perhaps the other Federal agencies. The Department of Interior, that will be also involved. But, primarily, I think, it resolves down between a responsible Federal agency and a responsible State department or departments that will be responsible for making a thorough investigation and making recommendations as to what use should be made or what uses can be permitted in the public interest. And if we approach it on this basis, I don't think that we are going to have -- are going to be too far from being right and in keeping with our responsibilities of proper management of all of our natural resources.

I found that industry -- for instance, the oil companies. We have heard the oil industry called a lot of names here in Alaska and certainly I have been involved in this since the question came about as to whether we were going to allow any oil development or exploratory work on the Kenai Peninsula. Our organization at that time was quite new in itself. In the final analysis we took the position that within certain areas in the Kenai Peninsula that oil development could be and should be allowed with proper safeguards and with proper administration. Now, in the Kenai, of course, we have development primarily with two oil companies. Richfield, probably another tidal one and Standard. And we have watched this very closely, believe me, and we have really no serious objections to how it has transpired there and the programs that have been carried out in its development.

When we get into some of the other areas. Cook Inlet, for instance, and some of the others that are being proposed in the area of oil exploration and possible development, I believe that we have had some problems. Which were perhaps not at all necessary. To the extent, at least, that they have been involved, I believe it is a State responsibility and it is also, of course, the Federal Government's responsibility. And in this instance perhaps the State was remiss in not setting up proper rules and regulations and guidelines for the operation of some of these new companies coming in. I believe that we are on the verge of getting this resolved and I am sure that if the proper rules and regulations and guidelines are presented and we are made aware of them, that we'll have a different situation then we have had in the Cook Inlet area or any other future development area similar to that where oil is concerned. Now, we have been assured by the oil companies -- and this is a matter of record -- "Tell us what to do and what your rules are and we'll make every effort and we'll certainly cooperate one hundred percent to abide by it." This is the kind of attitude we have got from the various oil companies that are doing business. We haven't discussed this with all of them, but the major ones we have and it's a matter of public record -- a matter of written record. I believe, gentlemen, that there is an area here where certain areas of doubt are being raised and certain areas of concern are being expressed where really I believe there is no real reason for this whatsoever. I think that if we are all willing to accept certain principles and standards. For instance, as I mentioned, the multiple use concept and follow that concept and be willing to abide by the decisions that are made by responsible agencies, that we'd all be the better for it and the State of Alaska will continue to benefit. Perhaps even more than it would if we would ignore that type of an approach.

MR. T. A. WASTLER

I just wanted to ask Mr. Boddy if, in your statement, when you submit it, would you include some discussion of the

Cordova incident?

MR. A. W. BODDY

I certainly will. I will be very happy to. And this you can also verify from the records of the U. S. Fish and Wildlife Service and U. S. Forest Service and, I am sure, the territorial records of Territorial Alaska.

MR. T. A. WASTLER

We'll certainly refer to those, but we'd also appreciate having an outside opinion.

MR. A. W. BODDY

I'd be very happy to present it.

MR. E. K. DAY

Thank you very much, Mr. Boddy. We'll be looking forward to seeing your report. Thank you very much. Now, I'd like to call on one of the Federal agencies. Mr. George Roskie, Alaska Region, U.S. Forest Service.

MR. GEORGE ROSKIE

Chairman Day, Secretary Miller and guests. My name is George Roskie. I'd like to read the statement. It is not too long, if I may, to make it more understandable. I am representing the Alaska Region of the U. S. Forest Service, Department of Agriculture. Public Law 89-753 entitled, "Clean Water Restoration Act of 1966," provides for the cooperation of the Secretary of Agriculture with the

Secretaries of Interior, Army, and the National Water Resources Council and other appropriate agencies and organizations in a comprehensive study of the effects of pollution in estuaries and estuarine zones. The Alaska Region of the U. S. Forest Service will do whatever is necessary, within the limits of our resources, to assist in the conduct of the Alaska portion of the National Estuarine Pollution Study.

The Forest Service fully recognizes the need to understand the complex interacting relationships existing within Alaska's estuaries and estuarine zones. Their natural as well as developed values will be highly significant in Alaska's future. The need for protection, management, and proper use is self-evident and well documented. There is little question that the National Estuarine Pollution Study is timely and should receive the contributions and support of all agencies, organizations, institutions, and individuals directly or indirectly affected.

In considering the area or scope of this study, it is evident that early attention should be given to defining or delineating those areas with which the study will be concerned. Within and adjacent to the 11,000 miles of coastline bordering Alaska's National Forests, there are significant numbers of estuaries and estuarine zones. These tend to vary widely as to their ecological and biological situations and in their present and future need for protection from pollution to insure their highest beneficial use and enjoyment.

We believe that those areas which fall within the definition of estuaries and on which there presently is, or appears to be, a pollution problem should be identified for early consideration in the study. Other areas which qualify as estuaries or estuarine zones where there appears to be little or no pollution should be identified for future study and consideration.

The present uses and possible pollution of Alaska's estuaries and estuarine zones seem to be largely related to centers of population and to sites where extractive and other industries operate. The rather thin and widely dispersed use of Alaska's estuaries for most other purposes seems to have little, if any, pollutant effect. It is quite likely that some pollution is occurring in all estuaries located within or near populated areas. The level and significance of this pollution has not been adequately documented.

In the area of extractive industries, the Forest Service is most directly involved on the National Forests in timber cutting and removal. Log dumping and rafting areas may have caused limited accumulation of bark in some estuaries where the flushing action of the current does not clean the bottom. The effect on the biology and ecology of such areas is being studies in cooperation with the State Department of Fish and Game. However, results are not fully documented to date and conditions before dumping and rafting began are generally unknown.

Sewage from logging camps undoubtedly affects nearby receiving waters to some degree. The situation here is similar to sewage problems in small villages or towns throughout Alaska, except that generally the condition is not permanent or continuing.

There is presently no information showing that logging activity within Alaska's National Forest watershed has significantly altered the existing conditions of estuaries. The Forest Service works closely with biologists of the Alaska Department of Fish and Game in evaluating the probably effect of logging operations on salmon streams within or adjacent to proposed timber sales. Standard precautionary requirements have been added to timber sale contracts over the years to minimize erosion from logging operations. Special requirements are made when the situation so demands. We believe this concern and attention on National Forest watersheds has resulted in an insignificant amount of sediment deposition.

There is some indication that logged streams may be slightly warmer after logging than before. This could have a possible minute affect on estuary water temperatures. But the degree of change and whether or not such change is beneficial or harmful has yet to be determined.

Discharges from the economically significant pulp mills in Ward Cove and Silver Bay have produced some sludge deposits and have apparently altered to some degree the concentration of dissolved solids in and near the surface of these salt water areas. Here it would seem that bioassay work is needed to evaluate the possible effects of such concentrations.

In considering the future best use of Alaska's estuaries and estuarine zones, a paramount question comes to mind. This is the question of determining the basic natural quality of each individual estuary and its inherent natural values. We believe there is a need for careful inventory and analysis as a basis for the best possible management and use of our estuaries and estuarine zones. Since the present study concerns itself mainly with pollution, we assume that future studies such as those contemplated by House Bill 25 and the presently planned Framework Study under the direction of the National Water Resources Council will consider such inventory and analysis.

In the field of management, present laws and governmental controls of Alaska's estuaries and estuarine zones appear adequate to provide for proper use and to prevent pollution. The problem appears to be one of implementation of programs and proper enforcement of existing statutes. Until such time as there appears to be a need for special classification or treatment of estuaries and estuarine zones, we believe present statutory authorities and responsibilities are adequate for their proper protection and management.

As the National Estuarine Pollution Study progresses, we plan to work closely with the Alaska Water Laboratory, the State of Alaska, and other interested agencies, organizations and individuals. We will provide information currently available to assist in developing the best possible study and recommendations for protection and prevention of pollution in Alaska's estuaries and estuarine zones.

I have a copy to include in the report.

MR. E. K. DAY

Are there any questions from the panel?

MR. T. A. WASTLER

I have a question which is a little bit vague. The Secretary of Agriculture has, of course, been asked to provide information on his agency's program, but the thought occurred to me while you were speaking, that in view of the newness of Alaska's Statehood and the degree of Federal control of Alaska territory from the territorial times, do you feel that the activities, say, of the Forest Service in Alaska should be different from those of the Lower '48, or would you care to comment upon that at this time?

MR. GEORGE ROSKIE

You sure opened a big wide door there, if I read your question correctly. You say, "Should our activities be different or the same as the Lower '48?"

MR. T. A. WASTLER

I said it was a fairly vague question. It was just a thought that occurred to me.

MR. GEORGE ROSKIE

The difference, of course, relates to the variance in the forest types, the forest cover, the forest situation which we have in Alaska, which, if you haven't heard before, is different. It is different in many ways, but there is, of course, some difference in the type of land -- the type of resource we are working with and you have to apply somewhat different practices and procedures, although you adopt and apply the standard accepted proven ones. Am I skirting around the question neatly? Do you have anything specific in mind?

MR. T. A. WASTLER

No, unfortunately. I think we'll probably have to go back to the office and think about it and come up with a decent question. Another point is, what extent or what degree of control does the Forest Service exert over the waters within the National Forest, or does it?

MR. GEORGE ROSKIE

By, "Control," you mean use of the water? Water rights or the condition and quality?

MR. T. A. WASTLER

Well, on the Water Pollution Control Administration I think mostly in terms of quality.

MR. GEORGE ROSKIE

The pollution part of this statement deals with the matter of control of use to prevent sedimentation, to prevent erosion, to prevent contamination of streams. There are many ways that we do this. Through the contracts with our logging operators -- timber operators, through the control of construction projects, whether they be a private operator or a Borough, City, State or Federal Government; through proper control of the other uses of the National Forest where water quality or pollution might be a factor.

We get a lot of assistance in this from, say, Fish and Game, for example, the Bureau of the Sport Fisheries. We have a cooperative monitoring program where we sample streams for sedimentation for survival of salmon fry -- a number of things. We have measuring devices to insure that our program is meeting the requirements so that we are not contributing to silt and to pollution, and, of course, the basic requirements of the State law are quite helpful in this for construction projects and their influence on the National Forest.

MR. T. A. WASTLER

No further questions. Thank you.

MR. JOHN VLASTELICIA

Today we were treated to an airplane ride over south-east Alaska by the Fish and Wildlife Service airplane and we saw many areas all over south-east Alaska here being logged level and you could see some of these good management practices that you talked about here -- that I expect that you were talking about. The leaving of a wide buffer strip of trees next to a creek or down near the shoreline and I expect that these were perhaps Forest Service requirements put into your contract. We also saw some areas where they were logging right into the creek or right into the shore side and perhaps they were, "Brand X," loggers or something, but what if these were not Forest Service administered and private -- it is private logging on privately owned land or State administered contracts. There are some good logging practices that go with logging in a shoreline area and how best can you bring these requirements into use if it is not a Forest Service contract?

MR. GEORGE ROSKIE

You are saying if it is not Federal land?

MR. JOHN VLASTELICIA

I don't know if it was Federal land. There were some of them that were logging right into the shore area and yet many places you could see this wide buffer strip. Is there a reason for this?

MR. GEORGE ROSKIE

Well, yes, there is. I have been treading on rather thin ground because our chief of timber management is sitting in the audience and another fellow that all of you know, who can, either one of them, answer perhaps well or better, but I will take a stab at it and if you think I am off base, Russ, I am sure you will climb in. As far as our actual program for logging is concerned, there are a number of factors involved besides pollution. Beach fringe, our wildlife habitats, protection of water pollution and prevention of sedimentation is one of the reasons we leave these strips. In much of our Alaska watershed we do have a situation which is a little bit different in that our normal ground cover is rather heavily organic to a considerable depth. It accepts water quite readily. It has to to get up to two hundred or more inches a year in south-east. Consequently, the amount of overland flow on the forest floor is in most cases non-existent, if not non-existent, and the actual production of sediment or material that might go into a stream comes from inadequately drained roads or somewhere where you open the -- remove that surface cover on the ground, so we are dealing with a rather complex problem and our cutting practices recognize this. I am -- I am not sure I am getting what you are driving at.

MR. JOHN VLASTELICIA

I think so. From a first beginner's viewpoint or view down there it looked like bad management practice, but it was actually based on good management plans.

MR. GEORGE ROSKIE

This is one of the things, of course, we have been criticized for. We haven't yet figured out how to make a clear cut look pretty. They just don't look pretty. You assume many bad things about them because they are rough and rather stirred up. Basically, the damage to the soil resource is quite minimal. As long as you do not expose the minimal soil. This is where you begin to get soil movement and sedimentation and erosion and pollution in your streams. We watch this very closely and have a number of projects -- a number of studies where we are monitoring the streams to determine if sediment is in the stream, the source and the amount. We have a study on Huntville Island aimed specifically at this to determine when and if any sediment occurs, where is it's source, what is it's cause, and, as I said, the amount that accrues from the actual removal of timber from the south-east area is insignificant. I won't say that it doesn't come down from some other source. Roads and some other places. But, this is a matter of the manner in which you construct a road or development in the open.

MR. T. A. WASTLER

I think what I was trying to say was, in the management which the Forest Service must exert in an area in which a large part of the natural resources are essentially the responsibility of the Forest Service, don't you have to be more careful? Aren't there additional responsibilities which must be observed to protect what you already have, instead of trying to correct what's already been done? I think that was the question.

MR. GEORGE ROSKIE

That is very obvious. In general, an ounce of prevention is worth a pount of cure. The fellow on whose shoulders this weighs the heaviest is here tonight. I don't think he's been properly introduced at this time, but perhaps you should do that now. That is Regional Forester Howard Johnson. Is that all right to ask you to stand up, Howard? He is the fellow that has the broad shoulders.

MR. HOWARD JOHNSON

Well, like the group at the head table is here because of a Federal law, and we are also a part of the Federal organization, we operate the National Forest under a number of laws, but one that is of particular significance here is the Multiple Use Act of 1960, and this is our primary prescription for managing lands and it spells out in this act -- and I recommend that you study that carefully -- what we are talking about. We talk about the management of resources of the wood, water, recreational, wildlife and forage. Now, forage is a very important item in the Lower '48 states. Not so much here.

We, I think, have one of the most sophisticated programs of research and study for management of habitat areas on fish streams in the country. I will stick with this statement. We have been doing research work since 1949, just prior to any major logging efforts, and this was in order to give us a calibration period so we'd know what happened before and after.

It was an eternal question as to whether timber should be logged next to streams that produce fish. We know from experience that this maybe desirable in some places and in other places not desirable. We know that fringes of timber left along streams have a tendancy to blow down from wind and cause trouble. This was one of the questions we have been practicing with in our shore logging. We call it logging directly on the water. The outfits will operate on floats and actually out into the water. As far back as a hundred years here as you flew around, if you had an opportunity to see a great many of these areas that were cut, and they now look beautiful. We obtained natural regeneration on ninety-eight percent of the acres harvested. They are within a period of three to five years, which is highly acceptable in the forestry profession. I think that we are most fortunate there. I will give you a clue. Ninety percent of our problems in connection with protection of streams have to do with the proper control of road construction in order to minimize the effects of siltation as a result of that. I am sure I have already talked too much.

MR. GEORGE ROSKIE

It's nice to have somebody like that in the back of the room to answer these. I was going to point out that unfortunately people associate us too often in removing the timber. Our area of concern goes considerably further than that and here tonight I have with me the man in charge of our watershed management division. He has with him our hydrologist and also has a branch chief for Wildlife sitting back there and they are all in this problem of maintaining pure clean water. Unfortunately our fishery biologist and our soil scientist aren't here.

MR. JOHN VLASTELICIA

Both of you mentioned the problem of roads. The sedimentation from road grooming practices. Does the Forest Service exert any kind of restrictions in the letting of their Forest Service contract on how and where roads should be built? Logging roads?

MR. GEORGE ROSKIE

Very definitely. Location and type of construction on all kind of roads. Not just logging. Clear up to and including waste, the matter of cleanup, the matter of the location of oil pits, the matter of drainage, structures, the matter of where and how you cross a stream, which is one of the key things in Alaska. It is a matter of keeping equipment out of the stream and providing a crossing which does not constantly contribute to erosion or sediment to the stream itself. It is of real importance. These are done under a permit basis normally, whereby an agreement from the agency that builds it is obtained.

One other comment I might make and that is I see a number of fellows sitting in the audience this evening who sat all day, I know, working with Gus Norwood, Colonel Hardin and others on the kick-off phase of what will, we are sure -- or at least are hopeful will be stream work studies sponsored by the Water Resource Council. A broad scale inter-agency study which will take a period of time, but I am sure you fellows are familar with these. This may well provide many of the answers for water -- water related land uses that are being discussed here tonight.

MR. E. K. DAY

Thank you very much, Mr. Roskie. And thank you also, Mr. Johnson, for the comments that you added to Mr. Roskie's statement. Now, we'd like to call on Dr. Carleton B. Scott of the Collier Carbon and Chemical Corporation.

MR. CARLETON SCOTT

Mr. Miller, Mr. Day, panel members, ladies and gentlemen. We are newcomers to Alaska and are not in a position to comment generally on all of Alaska's estuaries. However, in the last year we have become, we think, rather experts in the problems of Cook Inlet, and I would like to comment basically on the way we see the estuaries in light of our experience in Cook Inlet.

We believe that the Alaskan estuaries should be utilized to benefit the most people. Now, we think that wherever feasible, they should produce sea-foods, transport people and goods, provide a means of safely disposing of human and industrial wastes, they should provide recreation and they should be esthetically pleasing.

Estuaries should be available for use by all interests unless activities of these interests can be shown to present a hazard, or to be detrimental to the activities of other interests.

The maximum utilization of estuaries can be achieved by having all users monitor their activities so as to avoid changes in the estuaries that would significantly interfere with the activities of other users.

The types and degrees of monitoring should be specified, we believe, by an appropriate agency having management responsibility for all Alaskan estuaries.

Management of Alaskan estuaries should be handled, we believe, by a State Water Resources Board. This Board should be comprised of representatives from all interests -- State, Federal, industrial and the general public. This Board should have authority to collect and spend funds for the beneficial development of Alaskan estuaries, and we believe very strongly that it must have as an integral part a reputable scientific arm to assure the technical soundness of all decisions and actions that could influence the uses and ecologies of the estuaries. I want to emphasize that point. The great need for an irreputable scientific arm. Those comments are our recommendations from the point of view of use and management of estuaries. I would like now to take a moment to describe how our activities are keying in with these recommendations.

By the end of this year Collier will start becoming a major user of one of Alaska's greatest estuaries, Cook Inlet. We'll be transporting goods to and from our plant at Kenai and we'll be safely disposing of industrial waste water from these plants. We feel these are beneficial uses of Cook Inlet and they will be fully compatible with the uses of Cook Inlet by other interests.

Although management of Cook Inlet is not yet on an organized basis, we believe in the ultimate acceptance of the proposals I have put forth and we are taking the necessary technical steps to have our organizations conform to these recommendations. Briefly, our technical steps are as follows: We'll be discharging approximately one million gallons per day of a waste water stream. In this waste water stream there will be something less than .1% ammonia. We are constructing an elaborate treatment plant for the proposed treatment of this waste water stream. In this plant we'll have primary and secondary adjustment of pH, solids will be settled and removed, floating debris and oil will be skimmed and removed, and the water will be stored several days to reduce the temperature, Following this treatment, which happens to be considerably more elaborate than that practiced in many municipal sewage plants, the effluent will be discharged into

Cook Inlet through four diffusers located beneath the plant's pier. In order to achieve maximum dilution rate, ammonia-bearing effluent will be discharged only during flood tide when there is a strong current and extensive turbulence in the Inlet.

Oceanographic studies have been made of Cook Inlet with our cooperation mainly by the University of Alaska Institute of Marine Science. This was done three years, 1966, '67 and '68. These studies determine current flows past our plant, they determine the normal levels of ammonia in oceanic and in Cook Inlet water, and the natural purging rate of the Inlet. These studies show that the ammonia from the waste water stream would be diluted quickly and flushed out to sea without any possibility of accumulating to toxic levels.

Toxicity of the waste stream was determined for indigenous phytoplankton, zooplankton and salmon. The University of Washington made the salmon studies; the University of Alaska made the plankton studies.

We are going one step further with the salmon toxicity studies and are confirming the results in live-box studies at our plant's pier. Local salmon fingerlings are being maintained in water drawn from the diffusion zone beneath the pier. If the salmon can be grown satisfactorily this year, before discharge begins, they'll be grown again next year after discharge begins and we'll treat them with water containing the waste -- the Cook Inlet water containing the waste effluent.

Based on the rapid dilution of the effluent, and the safety of ammonia in low concentrations, the oceanographers and fisheries experts believe the only effect effluent ammonia will have on the Inlet will be to beneficially increase the native level of ammonia that is continually being used as food by the plankton in the Inlet.

Going beyond what is carried on so far in the way of research, we are now going into the monitoring stage. This monitoring work started early this year. Work is being done both from the plant's pier as well as from a small oceanographic boat provided by the Company. We are monitoring the area most closely involved with our operations which is about a hundred and eighty square miles of Inlet within a block in the central part of Cook Inlet. Within this area we are determining the ammonia, nitrite, nitrate and urea concentrations in Cook Inlet water. Salinities, temperatures, currents and silt loads as these are related to the natural flushing of the Inlet. We are determining the populations and conditions of inter-tidal and sub-tidal benthic organisms along the beaches near the plant. And we are determining the populations and conditions of plankton in the area of the Inlet under study. That one hundred and eighty square mile block.

Background data are being collected this year prior to starting up and then monitoring will start up and continue through 1969 and on into the future until there is complete assurance that the predicted dilutions are being achieved, and that no adverse effects are occurring.

No other ammonia or urea plant in the world has had such extensive tests and monitoring work on its effluent stream. This is, and has been, an extraordinary program, yet it is justified because it will prove conclusively that the plants can be operated so as to have no adverse effects on Cook Inlet, or other interests using Cook Inlet.

Collier believes that Alaska can benefit the most by adopting a multiple use policy for its estuaries. For this policy to succeed, there must be a single, technically sound, State supported agency that will have management responsibility over Alaskan estuaries. Collier is directing its anti-pollution activities towards the ultimate establishment of such an agency, and offers advisory assistance in the organization and operation of this agency. Thank you.

MR. E. K. DAY

Thank you. Any questions from the panel?

MR. JOHN VLASTELICIA

Do you see any Federal role at all in this management plan? You talked about a Water Resources Board perhaps for

State and then the leadership from the various water users in monitoring and programming their own effects on the estuaries. Do you see any Federal role in this?

MR. CARLETON SCOTT

Yes. I think the Federal role would be in the form of technical advice and fund raising. We feel very strongly that there must be a single agency involved and it must be a sound one.

MR. JOHN VLASTELICIA

Do you see any parallel between this kind of a system and perhaps the Water Quality Standard system where there is a Federal-State relationship now?

MR. CARLETON SCOTT

There is a certain parallel.

MR. JOHN VLASTELICIA

The Federal Government has set up guidelines and each State has gone together independently to derive their own standards.

MR. CARLETON SCOTT

There is a parallel.

MEMBER OF THE AUDIENCE

Dr. Scott, I have a question. If your monitoring program showed an adverse effect upon the estuarine area, what does Collier propose to do?

MR. CARLETON SCOTT

There won't be one, because we won't operate the plant so that there will be one.

MEMBER OF THE AUDIENCE

Well, that is nice, but supposing there is?

MR. CARLETON SCOTT

Well, I can't answer that in the answer that I think you are asking for. because I would be committing the company to an act that I couldn't do. All I am saying is that our public stand is that we'll operate the plant so as to not have an effect on the Inlet. When we came into the State we made our position very clear that we were not going to upset any other interests in the Inlet, and that statement is going to stand.

MR. E. K. DAY

Thank you, Dr. Scott. Now, Mr. Richard Britt representing the Department of Health and Welfare.

MR. RICHARD BRITT

Mr. Chairman, ladies and gentlemen, my name is Richard Britt. I am an engineer with the State Department of Health and Welfare. It is the basic policy of the State in regard to our water and related land resources that our water resources will be protected and be made available for public use. That adequate protection will be given to our fish and wildlife resources, and that in addition, accommodation be made for both industry and agriculture to benefit from its use.

The primary role of the State and Federal governments in this area is to determine what we have, what it is worth, and how we can take care of it. The major areas of effort to these ends may be listed as follows: -- and there are eight:

1. Inventory all estuarine areas showing their condition and potential for supporting our fish and wildlife resources, what is happening to such areas, how they are being threatened, and what estuarine-associated natural resources are present. This inventory would commence with those areas most under pressure from population and/or industrial growth.

2. Determine the pollution, its origins, and what is required for its control.

3. Acquire more specific knowledge about the life histories and environmental requirements of estuarine-dependent species.

4. Expand fundamental research in estuarine systems to include studies in productivity, hydrology, nutrient circulation and transfer, species interaction, and biological indicators of environmental change.

5. Develop a sound basis for determining the economic benefit from natural estuarine areas and their living and mineral resources.

6. Eliminate those barriers that prevent sound and equitable management of estuarine areas.

7. Develop techniques to predict effects of proposed environmental alterations on fishery resources.

8. Develop more sophisticated estuarine husbandry programs, including techniques for increasing fish production by alteration of currents and mitigating effects of environmental alterations.

The following is to present briefly the State's present activities in this area; -- and there are five:

(a) Water Quality Standards have been approved for the State, subject to certain modifications. The Standards, when filed with the Secretary of State, become State Law. These Standards provide for control of pollution in all interstate waters of Alaska.

(b) Under Title III of the Water Resources Planning Act (P.L. 89-80), the State proposes to add various personnel including a coordinator, a geologist, and biologists to the staffs of the Departments of Natural Resources, Fish and Game, and Health and Welfare in order to provide specifically identifiable water resources planning and management staffing in Alaska. Included in this program will be a summary of natural resources, stream patterns, climate and other relevant data as they relate to water and related land resources. A priority will be established of water and related land resources needs, all of which will be coordinated with studies to be made of our estuaries. A comprehensive water resources plan will be developed for the State of Alaska.

(c) The State, through the Departments of Health and Welfare and Fish and Game is cooperating with the Coast Guard, the Federal Water Pollution Control Administration, the Alaska Municipal League, and the Western Oil and Gas Association to provide a plan to minimize the effects of a spill of oil or other hazardous substance in Alaska. This plan will, by the nature of our oil industries, be largely concerned with estuaries.

(d) A program of stream mileage and coding is under contract to the University of Alaska. The Department of Fish and Game is also inventorying lakes and ascertaining stream mileages.

(e) An application to the Water Resources Council for funds to prepare a comprehensive plan for the water resources of Cook Inlet has been approved. Invitations for proposals for the conduct of the study and plan development have been dispatched. A June 24, 1968, proposal submission date has been set. The plan is to be completed June 30, 1969.

That concludes my presentation.

MR. E. K. DAY

Thank you. Any questions from the panel for Mr. Britt?

MR. JOHN VLASTELICIA

This Cook Inlet plan that you mentioned. What will be produced here now?

MR. RICHARD BRITT

We hope that it will produce a plan which will show us where our problems are. We have heard much from the previous speakers that we have problems that we hope to combat. Industrial growth and population growth is heaviest in Cook Inlet. This will produce a plan for how we go about measuring what is happening to the Inlet, what we can do to prevent dangerous problems that are occurring, and hopefully, if any have occurred, this will show us how to perhaps combat them and possibly to revert back to a more normal state.

MR. JOHN VLASTELICIA

Will it consider at all what effects the future development might have on the Cook Inlet area and perhaps is it going to -- maybe zoning isn't the right word -- but, will it recommend the kind of development at all that Cook Inlet might accept best and how these things interact?

MR. RICHARD BRITT

This is what we hope. This is what we are going out for this plan for, to see what we can be provided by the various consultants who will receive these invitations to bid.

MR. JOHN VLASTELICIA

It might be just interesting to point out that a plan like this sounds to be very well founded and could never be developed too soon. San Francisco Bay has found itself in the unenviable position of declaring a complete moratorium on development -- Bayside development there until such studies and plans can be developed.

MR. E. K. DAY

Thank you. We'll now hear from Mr. Donald C. Groves of Ketchikan Pulp Company.

MR. DONALD GROVES

Mr. Day, Mr. Miller, ladies and gentlemen. I am Donald C. Groves, Technical Director for Ketchikan Pulp Company which operates a sulphite wood pulp plant on Ward Cove near Ketchikan, Alaska. We wish to thank the Alaska Water Laboratory for arranging this opportunity for us to speak in behalf of our interest and objectives in the important matter of estuarine water management.

We strongly subscribe to the necessity for protection and enhancement of Alaska's estuarine system. We feel, however, that it is not presently practical to obtain complete multiple use of all estuaries, but suggest that these bodies, as other interstate waters, be classified into use categories as currently covered in the 1967 Alaska Water Quality Standards.

We believe that the best interests of all Alaskans will be served by State control of interstate estuarian waters, under standards approved by the Department of Interior, Federal Water Pollution Control Administration, as set forth essentially under Public Law 89-234, "The Water Quality Act of 1965."

We again thank you for the opportunity to present our views on this subject.

MR. E. K. DAY

Thank you, Mr. Groves. Any questions from the panel?

MR. JOHN VLASTELICIA

Your statement that you didn't think that it was possible to obtain multiple use of all of Alaska's waters ---

MR. DONALD GROVES

Complete.

MR. JOHN VLASTELICIA

Complete multiple use. What problems are encountered there?

MR. DONALD GROVES

Well, in looking at the 1967 Standards as I have last seen them, it had use catagories -- wide ranging ones. I believe that it would be difficult to imagine Ward Cove where our plant is located as a spot for bathing and recreation, water skiing and so forth. Certainly the Cove is used for herring fishery and considerable sports fishing and things of that nature. My feeling is that perhaps not all the estuaries would be suitable for all uses at this time.

MR. JOHN VLASTELICIA

Could a pulp and paper industry participate in this plan that was mentioned? A State Water Resources Board with each industry or each water user monitoring and applying themselves to fit into this total management plan. Could a pulp and paper industry participate in such a plan?

MR. DONALD GROVES

We have. Since the plant has been in operation, essentially we have been monitoring the waters in the Cove and I think several weeks ago we had a group from the Commercial Fisheries and Water Laboratory visit Ward Cove. We conducted some parallel testing with them, shared our data for the past several years, I know, with them, so I see no reason why this couldn't be done.

MR. JOHN VLASTELICIA

You would recommend this type of plan? An overall State Resources Planning for development and management?

MR. DONALD GROVES

I would.

MR. T. A. WASTLER

Do you think that such a State Water Resources Board should have the authority to, let's say, zone various estuarine areas for different types of use? This, of course, would involve zoning the lands next to them. I mean, obviously you couldn't put up a pulp and paper plant at a place where you couldn't discharge your waste. Do you think the State Water Resources Board should have the authority to restrict plant locations, for example?

MR. DONALD GROVES

Well, I would think so. This is a parallel situation to zoning the land, as you say. I see no reason why it isn't similar to water pollution.

MR. T. A. WASTLER

By the way, I would like to try to water ski in Ward Cove with all those logs floating around.

MR. DONALD GROVES

There is quite a lot of fish there too.

MR. T. A. WASTLER

That is all the questions I have.

MR. E. K. DAY

Thank you. Now I'd like to call on Mr. Harry Rietze of the U. S. Bureau of Commercial Fisheries.

MR. HARRY RIETZE

Panel, ladies and gentlemen, I am Harry Rietze of the U. S. Bureau of Commerical Fisheries, Fish and Wildlife Service, whose offices are here in Juneau. I understand our sister bureau, the Bureau of Sports Fish and Wildlife is presenting a statement. We have reviewed their statement and supported it.

First of all, I'd like to express appreciation for the opportunity to present a statement. It is relatively short and I have a prepared statement that I think I'd like to present.

The estuaries of Alaska present an unprecedented opportunity for man to demonstrate his ability to modify his environment but at the same time to live in harmony with it. In Alaska, the coastline is convoluted to an extent found in few other places on the North American continent. The resulting coastal environment is essential to the life cycles of many species and is of tremendous benefit to others, including man. It is essential that we exercise care and advance planning in our activities along this coastline so that from this valuable resource we not only realize a maximum of its industrial potential, but at the same time do minimal damage to the natural and aesthetic qualities of that environment.

An important natural function of the estuaries of Alaska is that they serve as nursery areas for many species of commercial and sport fish. For example, for several weeks after emergence from the spawning streams, pink salmon fry move in the meandering currents of the estuarine waters between freshwater spawning areas and the open sea. The young fry increase several fold in size during this period. During their migration through the coastal zone to the sea, the fry must consume many times their weight in food organisms. If the food organisms are abundantly available at the right times along the migration route, the fry will develop sufficiently to continue their seaward migration. All salmon must pass through an estuary at least twice during their lives -- going to the sea as juveniles and returning to freshwater spawning grounds as adults. There is good reason to believe that the number of fish returning as mature harvestable salmon is directly related to the number of healthy fry or smolts which successfully reach the open sea.

Less is known of the life cycles of herring king crab, and shrimp, which are all known to use estuaries as nursery areas, but they too are dependent upon food in the estuaries for their survival.

Primary productivity of a body of water is the term used to describe its capability to produce phytoplankton, the microscopic plants which are the basis of the food chain and upon which salmon, herring, crab, shrimp and other marine animals are ultimately dependent. The many prerequisites for high productivity include the abundance of of oxygen, nutrients, and sunlight in the waters, and the stability of water conditions. When productivity is high, phytoplankton are plentiful, and, in turn, much food is available for the organisms that feed on the phytoplankton.

Man, however, can and has often altered estuarine conditions to the extent that primary productivity has been considerably lessened or even curtailed entirely. He has altered flow patterns on a seasonal basis. He has made chemical changes. By log-ponding and by discoloring the water, he has even reduced the amount of sunlight that reaches the phytoplankton. Such drastic changes to the environment, and thus to the primary productivity, inevitably also decrease the populations of larger species.

The coastal zone of Alaska contains estuaries of outstanding value -- estuaries that not only support the world's most intensive and valuable salmon fishery, but that support other valuable fisheries as well and that sustain nearly the world's population of several species of waterfowl. Alaska's fisheries are the state's most valuable single industry, employing nearly thirty percent of her labor force. Freshwater and estuarine species alone have a value of about $100 million annually, roughly half of which goes to the fisherman. The state and the nation cannot afford to sacrifice existing food resources in Alaska's coastal zone through neglect, misuse, or hasty development of new industries. We can ill afford to destroy existing fish and wildlife resources which are renewable, in our eagerness to develop new industries.

Yet, Alaska already has found iself unable to cope with detrimental side effects from use of our estuaries. Cook Inlet is the hub of a burgeoning oil industry that is now looking toward the Gulf of Alaska and Bristol Bay. Unfortunately, however, the growth and progress of the oil industry in Cook Inlet has been marked by a series of recurring pollution incidents. There is little evidence that control efforts have had significant effect on reducing the total rate of these occurrences. Just last week another two hundred barrels of oil escaped into the inlet. Fortunately it did not occur in an area of intense fishing activity nor were there large concentrations of water fowl in the immediate area. We cannot, however, continue to depend on our good fortune. There have already been a number of oil pollution incidents in Cook Inlet that, had they occurred in Bristol Bay or the Alaska Peninsula area during peak of the salmon or waterfowl migrations may well have made the Torrey Canyon disaster seem insignificant in terms of loss of fishing gear, marine life, and water birds. These are the kind of losses that we could quantify. We cannot yet accurately measure losses in terms of primary productivity and the far reaching effects of a disrupted food chain, nor can we put a unit of measure on aesthetic losses.

The latter, the aesthetic losses, have, generally speaking, received little consideration in the course of Alaska's development, although the social and economic value of preserving Alaska's coastal beauty is becoming more recognized. It makes little sense to develop a region at the expense of its livability, even though the most valuable resource, in the sense of being irreplaceable, may be biological productivity.

We in Alaska have a golden opportunity to avoid the tragic mistakes made in developing the lower 48 states, where little regard was given for maintaining the pure water resources and aesthetic beauty of our country.

We believe that industry, and community development can take place without the destruction of the existing biological and aesthetic values of the estuaries. Awareness of the wildlife and fish requirements, advance planning, and cooperation between developers and conservation managers is essential. It will require intensified effort on our own part to improve the state of our knowledge of estuaries and how they function. It will require greater effort, and no doubt considerable expense, on the part of those wishing to use the estuaries for development purposes to achieve compatibility with existing values -- but it can be done. It is not necessary to sacrifice these existing values to encourage the other uses of our coastal zone.

The most important factor in planning for the use and management of our estuaries must be a concern for the well being of all our people. In order to best serve them, we must learn to take greater cognizance of presently available knowledge of estuarine ecology. Existing State, Federal and municipal authorites should effect wise utilization and maintenance of estuarine values. At the same time, agencies which have this information should increase their efforts to make it more readily available to the authorities entrusted with making plans for estuarine utilization.

In order to insure that biologically productive and aesthetically valuable estuarine resources continue to exist, it may be necessary to assign priorities and costs in some other areas. This may mean added costs to consumers who derive the benefits from the resources. It may also mean that limited and controlled pollution of some estuaries must be tolerated in order to allow more complete protection of other aesthetically valuable and biologically productive areas. Increased knowledge, awareness, advance planning and cooperation are mandatory.

The Bureau of Commercial Fisheries takes the position that the following must be considered in an estuarine management program:

1. State, Federal and municipal planning must be coordinated and have long-range goals.

2. Some estuaries must be set aside for aesthetic purposes.

3. Highly productive estuaries must be preserved in that condition by limiting pollution to whatever degree necessary.

4. Because new industrial operations in estuaries may cause irreversible changes in their nature, extreme care must be exercised in the determination of their location.

5. Whenever estuaries are used for industrial purposes, provisions must be made for continuous review and monitoring to assure that no more pollution or alteration of the environment is caused than is mandatory from the standpoint of economics.

That concludes my statement.

MR. E. K. DAY

Any questions from the panel?

MR. JOHN VLASTELICIA

You mentioned the problem of oil pollution and the spillage of oil. What kind of authority is -- additional authority then might be needed or could be used in order to control this in Alaska right now where you have such things? How can this best be done?

MR. HARRY RIETZE

Within the estuaries?

MR. JOHN VLASTELICIA

Yes.

MR. HARRY RIETZE

Well, existing at the moment, I suspect, that there are State laws and some Federal laws on the books that perhaps require better enforcement. From the standpoint of the Department of Interior and the Fish and Wildlife Service, our authority is quite weak. We do not have the existing authority to engage pollution departments.

MR. JOHN VLASTELICIA

At least some of the Federal laws on the books come into action after this oil is spilled into the Bay and then there are provisions for ---

MR. HARRY RIETZE

This is right. I don't want to set myself up here as an expert on law enforcement and authorities. I think perhaps Mr. Day who represents the FWPCA, which is the lead agency for the Department of Interior is probably better up on the Department of Interior's authority then am I and I notice

Coast Guard in the audience. Coast Guard also has authority on oil pollution. But, the main point is that once the oil is spilled, we have a terrible problem already. I think there is close to some -- well, between eighty and ninety recorded spills or pollution occurrances in Cook Inlet and once it is done, how do you control it at this point? We don't have the knowledge of how to control it. We don't have the equipment here on the scene to control it. If we experiment with chemicals and detergents, we don't have the knowledge to know whether the effects of the chemical and detergent may very well be worse than the oil itself and, of course, some of that research is underway now. But, right at the present time if the pollution occurs, from the standpoint of Fish and Wildlife, we are not able to do anything about it.

MR. JOHN VLASTELICIA

That was going to be my next question. The laws that we have now are for after it happens. Can you think of anything that would help to enact or generate -- that would help it before it happens in the way of controls or planning or management or ---

MR. HARRY RIETZE

No. We have this matter under study right now, as far as national legislation. What might be required in terms of legislation. The Department of Interior has this under study and I don't believe I care to comment on that.

MR. E. K. DAY

Thank you. This concludes the list of those who indicated that they wished to make statements. We would, however, welcome additional statements from anyone in the audience who might wish to make one. If not, then we would like to express our appreciation to all of you who have -- again, for all of you who have taken the time to prepare statements or attend the meeting. We would like to make sure that everyone in attendance has registered. If not, I hope they will fill out one of these little green cards as they leave.

We'll make copies of the transcripts when they are completed and they will be available to all of those who indicate on the registration card that they'd like to receive a copy. And again, we'd like to make clear that the record will be kept open for an additional fifteen days for anyone who wishes to submit a written statement.

We would like to express our appreciation for the participation of the State in helping us with this study. They have put forth a lot of effort and we still have a long ways to go. I might mention that the next hearing will be held in Anchorage on June 13th for anyone who might wish to participate in the next hearing, so if there are no further statements, I guess that concludes the hearing for this evening.

Thank you very much for coming.

HEARING CONCLUDED

PART II

WRITTEN STATEMENTS

IMPACTS OF POLLUTION ON ALASKA'S COASTAL WATERS

statement for the Alaska Conservation Society
June 11, 1968

Importance of Alaska's Estuaries

Almost the entire coast of Alaska is made up of estuaries and estuarine zones. These areas are highly productive. They are the primary source of phytoplankton, the basic food-chain organism of the sea. Here is the spawning and feeding ground for the countless small organisms that in turn are the food supply for the commercially valuable resources of the sea. Our crabs and clams are produced and harvested here. They provide the nursery for shrimp and certain species of fish that spend the early part of their life feeding on the plankton before moving to offshore waters. The valuable shrimp fishery of Wrangell, for example, depends upon the estuary of the Stikine River.

Estuaries are the irreplaceable resting and feeding grounds for shorebirds, wading birds and waterfowl that migrate through and nest in coastal Alaska by the countless thousands.

Estuaries are particularly valuable for recreation. According to a news release from the office of the Regional Forester,(1) boating accounted for 18% of the total recreational use of the National Forests or more than 236,000 visitor days. Particularly valued by boatmen are sheltered unspoiled bays and coves where one may anchor or beach a boat and camp, picnic, swim, hunt or fish or just relax. A good supply of fresh water is desired and the clams, crabs and fish to be had are a valuable food source as well as a recreational asset.

Pollution and other practices that damage our estuaries.

The fact that most of the estuaries in Alaska are still in a largely unspoiled condition is not due to any foresight or planned protection.

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It is due entirely to the present lack of population pressure and the lack of industrialization. This picture has changed rapidly during the past 15 years, however, and unless positive protective action is soon taken our waterways will succumb to the same destructive practices and pollution that has occurred elsewhere.

An ecologist wrote that "The potential high productivity of estuaries has often not been appreciated by man, who frequently classed them as 'worthless' areas suitable only for the dumping of waste materials or useful only if drained or filled and planted with some terrestrial crop. When the high costs of such changes are considered, it may well be that utilization in the natural state is preferable, especially since seafood is a dietary item that vegetables can not replace".(2) When we look about us in Alaska we can only conclude that this lack of appreciation is also true here.

For some of our estuaries and estuarine zones it is later than we like to think. Some of the major problems are listed below.

Municipal pollution from domestic sewage and refuse.

Industrial Pollution

- Wood product industries
  - Pulp Mills
  - Saw Mills
  - Logging Camps and log storage areas
  - Poor watershed practices
- Sea food wastes
- Oil Pollution
- Coal

Dredging and fill projects

Gravel Removal from stream mouths

1. Municipal Pollution

Almost all of the major coastal towns are located on estuaries or in estuarine zones. Every town that has a sewer system depends on a waterway for the disposal of untreated sewage.

The coastal waters are also expected to absorb an unlimited amount of refuse. This ranges from the trash emptied from a wastebasket of a waterfront business, to trees and stumps bulldozed over the bank by a road builder, or the rusting cars that decorate shorelines.

Sewage and other wastes impose an oxygen demand on the receiving waters and this poses a serious threat to aquatic life. All waste is esthetically objectionable and sewage is a hazard to health.

2. Industrial Pollution :

Although Alaska is not yet an industrialized state, we are already confronted with a sizeable problem of industrial pollution.

Wood Products Industries:

a. Pulp Mills

Pulp Mills at both Ketchikan and Sitka are dumping both solid waste and sulfite waste liquor into the waters of Ward Cove and Silver Bay. (3) Foaming detergent is also reported to be a problem in Silver Bay. The toxicity of sulfite waste liquor for marine life is well documented as is the smothering effect of the sludge deposits. (4)

At Ward Cove additional damage occurs through the failure to allow adequate water past the pulp mill dam during dry periods, winter or summer.

b. Saw Mills

Small sawmills are located at tidewater throughout southeast Alaska. Expansion has occurred at Wrangell and the Ketchikan mill is now preparing to operate on three shifts.

In addition to the navigational hazard that results from some of the larger culls and log butts, the bark and other refuse from the mill operations eventually washes up on the tidelands where it slowly decomposes. It is at best unsightly but it re-enters the waterway as organic debris with a high oxygen demand.

At the present time, the Ketchikan Spruce Mill is dredging its mill-pond and barging the soggy, smelly debris into the waters of Tongass Narrows. How much of this will eventually decompose on the tidelands is unknown. There remains, however, the problem of just how much of this type of debris one waterway can absorb without damage to the ecology. Each time a boat harbor is dredged, the debris is also dumped into the Narrows.

c. Logging Camps and log storage areas

Our small bays, coves and inlets that afford shelter are quite understandably desirable as locations for the logging camps of southeast Alaska. Studies are needed to be sure that damage is not occurring in the estuaries in which these camps are located.

Log booms, float houses and other gear come to rest on tidelands at low water stages. We also have the problem of untreated sewage polluting these previously unspoiled bodies of water.

Another all-too-frequent practice is that of allowing logging of the land surrounding the estuary, apparently in an effort to make things as easy for the logger as possible.

Where logging is carried out from hilltop to tideland the additional burden of silt is added to that of pollution and probable mechanical destruction.

The same problem of possible mechanical destruction is created by the increasing use of estuaries and tidelands as log storage areas. Regardless of whether damage occurs from the weight of the logs stored there and the pounding that occurs from wave action moving the logs, it is very questionable that this constitutes the best use of our estuaries. It is a use that certainly interferes with recreation and one wonders what the effect is on the production of plankton and other small marine life and on the use of the area as a feeding ground for shorebirds and waterfowl.

d. Poor Watershed practices

Regardless of statements to the contrary, siltation of streams has occurred elsewhere due to logging on watersheds and it seems highly improbable that the same thing is not happening here. And silt in the stream inevitably ends up in the productive estuaries.

Logging is being carried out to the very banks of streams and there are instances where gravel was taken from the streams themselves for road building purposes. One such instance occurred on a salmon stream at the head of Carroll Inlet, an important estuary in the Ketchikan area.

More subtle effects may occur due to changes in stream temperature as the result of the removal of the tree cover that formerly shaded the stream. Without the stabilizing effect of the forest cover, there will also be higher highs and lower lows in stream water levels, and all of these may have detrimental effects on the estuary as well as on the stream itself. It is not possible to serparate changes on the watershed from the ecology of the estuary.

Another hazard is the use of sprays on the watershed. Fortunately there is a directive against the use of DDT and other persistent biocides by Federal agencies. We do need to know more, however, as to the effects of insecticides such as malathion or herbicides as 2,4-D when they are washed from the watershed and enter estuarine waters.

At the present time (5) the Forest Service is using 2, 4-D to control alders in the Nakwasina River drainage near Sitka. In spite of assurance by the Forest Service as to the safety of the operation there are indications that the chemical does have toxic effects under certain conditions. Ernest Swift of the National Wildlife Federation, for example, developed a pheumonia-like illness following the use of fertilizer containing 2, 4-D.

Seafood Industries

Although the future of the salmon and other seafood industries is entirely dependent upon protection of the estuaries and estuarine zones, they are among the major polluters of our coastal waters.

Seafood wastes are offensive to sight and smell and because of their high oxygen demand they are damaging to the very marine life upon which the industry depends.

The major problem areas are Ketchikan, Wrangell and Kodiak. There are problems, however, in almost every coastal town in Alaska. An estimated 191.4 million pounds of seafood waste was dumped in 1964. This, in addition to having a detrimental effect on the coastal waters, represents a 21 million dollar loss to the industry. (6)

Oil Industry

Oil pollution from offshore drilling rigs in Cook Inlet as well as pipeline breaks and tanker discharges have been destructive to waterfowl and are undoubtedly damaging the important salmon resource. The King Crab and Razor clams are threatened.

If improvements over Cook Inlet methods are not insisted upon, the oil industry will soon threaten the important Bristol Bay fishery.

In addition to those main problem areas there is chronic oil pollution in every small boat harbor and at every oil dock located in estuarine zones of every coastal town.

Coal

A new threat to yet another estuarine zone is now on the horizon. This is the proposed strip mining of coal in the Bering

River area east of Cordova. Unless controls are imposed at the very beginning of such an operation very serious damage can result to the waterfowl, wildlife and fishery of the Copper River, the Copper River Delta and the Martin and Bering flats. (7)

3. Dredging and Fill Projects

Nearly every waterfront town in southeast Alaska has had its own dredging and filling projects that have affected the estuaries of the area. A great deal of downtown Ketchikan is on fill in what was once the estuary of Ketchikan Creek. A new fill in the "Newtown" area will provide space for new business. The boat harbors on the other hand have resulted from dredging operations. The Juneau Airport is on a fill on the Mendenhall flats.

Whether these projects damaged important resources cannot be determined in retrospect. The volume of tideland removed from production is perhaps negligible in terms of the whole. But the fact remains that such practices cannot be continued indefinitely without damage to our important marine life.

4. Gravel Removal from Stream Mouths

A common source of gravel is from the various bars that have formed at the mouths of glacial streams. There is presently a request for the removal of 150,000 cubic yards of material from the mouth of the Salmon River near Hyder. (8) It is questionable whether any damage results from this removal in glacial estuaries but we do need to know a great deal more about the ecology of these areas before we commit ourselves to their destruction.

Best Use of Estuaries

The best use of our estuaries is for the purpose for which they evolved. There are no areas on the earth's surface with comparable biological functions and the welfare of our marine life depends on favorable conditions. It is not possible to overestimate their value for sport and commercial fishing, for wildlife and waterfowl conservation, for recreation or for scenic beauty.

With the population explosion upon us, the need for increased supplies of protein food is obvious. The value of fish and shellfish in providing this protein food is irreplaceable.

Where other uses are sought for our estuaries, very careful studies by an impartial agency should be made to determine that important natural resources are not destroyed. Alternate locations for important projects should be found. Important estuaries should no longer be destroyed by dredge and fill projects or damaged by municipal and industrial pollution.

For the protection of our estuaries, the following recommendations are made:

1. Implementation and enforcement of Alaska's Water Quality Standards.

2. Improved logging practices on the watersheds of important estuaries including leave strips along the streams adequate in depth to prevent blowdowns. Increased effort to keep logging equipment and debris out of streams. Stricter enforcement is needed to prevent removal of gravel from streams. Better road building methods and road location is needed.

3. Studies are needed by an independent agency having no vested interest in the results to assess the effect of logging practices on siltation and the downstream effect on the estuaries. Studies are needed also as to the effect log storage has on tidelands and estuarine waters.

Unless studies are undertaken soon and an enforcement agency is given the authority to halt damaging actions, the destruction of our estuaries is assured.

Estuarine Management

A good approach to estuarine management was that proposed by H. R. 25, introduced by Representative John D. Dingell of Michigan in 1967. (9) Under the constitution, the federal government has jurisdiction over navigable waters. Every dredge and fill project now has to have a permit from the Corps of Engineers as does the use of our bays and tidelands for log-storage. The Corps is charged with the responsibility for preventing the impairment of navigation. Meanwhile irreplaceable natural resources are being destroyed. The Dingell Bill would have required a permit from the Secretary of the Interior as well as from the Corps of Engineers to protect the public interest in the water and subsurface, the fish and wildlife resources and recreational and esthetic values. Permits would be issued only on the basis that the project would not "unreasonably" impair the natural resources of the estuary.

This bill was dropped following an agreement between the Secretary of the Interior and the Secretary of the Army. According to Assistant Secretary of the Interior Stanley Cain, (10) under this agreement the Corps of Engineers will notify state, federal and other interested parties when a permit application is received. Public hearings will be held when appropriate. Where problems arise regarding lowered water quality or unreasonable impairment of resource values, field representatives of Interior and Corps will try to reach an agreement before decisions are made to grant permits.

This is an improvement over the system of granting permits only on the basis of navigational impairment but it still leaves much to be desired.

The Dingell Bill would also have allowed a State conservation department, or commission, to share the responsibility for granting permits for projects that alter estuarine areas. If a state was not equipped to assume the regulatory responsibility, then the Secretary of the Interior would do so.

In view of recent State opposition to the provisions of the Federal Water Pollution Control Law it is obvious that the state of Alaska is not yet ready for such responsibility. One can hope that the day will come when the State will consider values other than those of immediate monetary gain or the promised benefits to be derived from the magical word "development".

Certainly the time is overdue for an inventory and study of our estuarine areas. We trust the hearings and studies conducted by the Federal Water Pollution Control Administration will provide the information needed. Re-introduction of legislation along the line of the Dingell Bill is needed for the prevention and abatement of the pollution and other deleterious activities that are threatening the nation's estuaries.

Summary

Importance of Estuaries

They are the primary source of phytoplankton production, and the source of the countless organisms that are the food for the commercially valuable resources of the sea.

Crabs and clams are produced here and they provide the nursery for shrimp and certain species of fish.

They are the feeding and resting grounds for countless numbers of shorebirds and waterfowl.

They are valuable for recreation and for scenic values.

Pollution and other Activities damaging estuaries

Our estuaries are largely in an unspoiled condition because of lack of population pressures and industrialization. We cannot take credit for any planned protection.

We already face serious threats to our estuaries. Chief among these threats are the following:

- Municipal Pollution
- Wood products industries, including
    - Pulp Mills
    - Saw Mills
    - Logging camps and log storage areas
    - Poor watershed practices
- Seafood industries
- Oil Industry
- Proposed strip mining of coal in the Bering River area
- Dredging and Fill projects
- Gravel Removal from stream mouths

Best Use of our Estuaries

Estuaries are best saved for the purpose for which they evolved. We should preserve what we cannot replace and there are no areas on the earth's surface with comparable biological functions.

Recommendations for protection of our estuaries

Implementation and enforcement of Alaska's Water Quality Standards.

Improved logging practices, and watershed use.

Basic biological studies by an independent agency with no vested interest in the results to assess the effect of watershed activities, log storage practices, gravel removal and other activities having the potential to damage our estuaries.

Estuarine Management

It is recommended that an approach to estuarine management similar to that proposed by H. R. 25, introduced by Representative John D. Dingell of Michigan be adopted. This would require a permit from the Secretary of the Interior in addition to one from the Corps of Engineers for dredge and fill projects or other activities affecting estuarine resources, recreational and esthetic values.

Unless studies are soon completed and action taken to halt the activities now damaging our estuaries we will soon find our coastal waters in the same deplorable condition as that of the other states.

Thank you.

We ask that this statement be included in the record of the Juneau hearing of June 11, 1968.

Dixie M. Baade

Dixie M. Baade
for the
Alaska Conservation Society
Box 5-192
College, Alaska 99701

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Anchorage Chapter, Izaak Walton League norary
Alaska Range Association
Haines Sportsmen's Association
Juneau Rifle & Pistol Club
Ketchikan Rod & Gun Club
Alaskan Command
Alaska Guides Association
Anchorage Sportsmen's Association
Alaska Conservation Society

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Sitka Sportsmen's Associatio
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Cordova Izaak Walton League, Honorar

June 22, 1968

RECEIVED
JUN 26 1968
ALASKA WATER
LABORATORY

Mr. Walter Wilson, Alaska Coordinator
National Estuarine Pollution Study
Alaska Water Laboratory
Federal Water Pollution Control Administration
College, Alaska 99701

Dear Mr. Wilson and other Members of the Committee:

Again we would like to emphasize that we appreciate the opportunity of expressing our views with regard to water pollution and also our views regarding the use of estuarine areas throughout the coastal waters of Alaska.

This statement will supplement the oral statement which we made on June 11th in public hearing in Juneau. Alaska. For the record, the Alaska Sportsmens Council is a statewide conservation organization affiliated with the National Wildlife Federation, the largest single conservation organization in the world today. As an affiliate of the National Wildlife Federation we have been a part of the total effort to establish sound and basic laws and rules and regulations dealing with pollution of the waters of the nation as a whole, and also, we have been a part of the total effort to establish protection for our valuable estuarine areas. Water pollution is something which Alaska has not been subjected to to the degree that other areas throughout the continental United States have been involved in and are confronted with. In this respect we are very fortunate. Also, we are very fortunate that we have very few of our estuarine areas contaminated or polluted to date.

We believe that we should take a hard look at what has happened in so far as pollution is concerned throughout the continental United States.

We believe that we should review also what has been responsible for the conditions that exist. Primarily it has been public apathy and dependency upon local authorities and state authorities to establish rules and regulations for the prevention of pollution and for control. The records will reveal that there has been a complete failure in almost every instance. As a result of this failure, the federal government has moved into the picture. This is not only by necessity, but by demand of the public that our waters be not only cleaned up, but that they be kept clean and usable for all purposes including domestic uses.

There has been a tendency as the states develop industrially, and it is a tendency today in Alaska, to sacrifice everything that we have for the immediate gains without any consideration for the future.

In our oral presentation on June 11th we emphasized our concern regarding the estuarine areas of Alaska. The value of estuaries has been well established over a period of many years, and the estuaries in Alaska are perhaps even more valuable than any other similar areas in other coastal waters of the United States. The records will substantiate this statement, particularly in regard to various species of salmon that spawn in estuaries, and also the value of estuaries in Alaska to sport fish and other marine species. It has also been well established that Alaskan estuaries are of primary importance to many species of wildlife including water fowl. To date very little factual information has been documented in regard to estuaries throughout Alaska.

It is our belief that a definite plan should be conceived and executed at this time for evaluation of all the estuarine areas within the State of Alaska. This is not only important to the fish and wildlife resources, but it will also be of value to industry desiring to utilize the other resources of Alaska and to also utilize estuarine areas in the process. It will furnish basic information upon which decisions can be made without undue delay.

In regard to water pollution control, we have taken the position that the State should establish the basic rules and regulations in regard to water pollution control in all the waters of Alaska. We have participated in numerous hearings; we have made definite recommendations in regard to basic rules and regulations; we have discussed this problem with industry, including the oil industry, and we find that they too are interested in rules and regulations. In our opinion, the State has been remiss in not coming forth with basic rules and regulations regarding the pollution of our State waters. This is particularly true in the Cook Inlet area and other areas where oil development has become a major problem.

We are pleased to note that the Alaska Department of Fish and Game and the Alaska Department of Health and Welfare and the Department of Natural Resources have moved forward in this area

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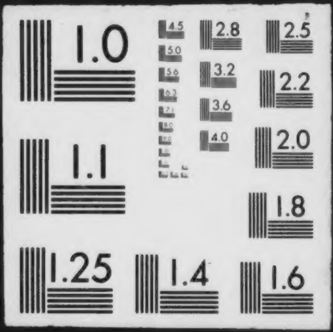

and that proposals have been made to the Secretary of the Interior which apparently meet the criteria set forth by the federal government for control of water pollution.

We are particularly pleased to note that all industry in Alaska will be included, as well as all municipalities and individuals who are in any way involved in water pollution. We believe that it is the responsibility of the various State agencies, the Department of Fish & Game, the Department of Health & Welfare, the Department of Natural Resources, and the Department of Public Works to coordinate their activities and their efforts toward prevention of pollution, and also the abatement of pollution where it presently occurs.

We believe that all coordination and cooperation must go further than cooperation and coordination by the State agencies. We believe that there must be, and that it is absolutely necessary, to have various federal agencies involved such as the Forest Service, the Department of Agriculture, the U.S. Fish & Wildlife Service, the Department of Interior, and others because of the responsibilities that these various federal agencies have in regard to management of the resources in Alaska. The oral statement will reveal that we have made a statement to the effect that 90%, or approximately 90%, of the land in Alaska was public land; and as such, the federal agencies have the responsibility to manage these lands under the directives established by Congress in the interest of all of the people.

Basically the concept of this management is one of multiple use management of our resources. The Alaska Sportsmen's Council has subscribed to the multiple use concept of resource management. It is our belief that this is the most practical approach to a very complex and very difficult problem of resource management.

During our oral presentation in Juneau on June 11th we also emphasized our adherence to the multiple use concept of resource management. Following our oral presentation numerous questions were directed to us in regard to whether we had had and could demonstrate that multiple use of resource management had been applied or executed in Alaska. At that time we pointed to several instances where decisions had been made based on the multiple use concept of resource management, namely the Cordova area or the Copper River Delta area. Reference was also made to other areas, including Stikine Flats in the Wrangell district. We were asked to submit as a part of our written statement material which would further substantiate the statements made, and to make available the manner in which these agreements had been reached. We are submitting at this time copies of cooperative agreements developed in cooperation with the various

Alaska Departments, and also various federal departments. These supercede the original ones which were mentioned in the statement made on June 11th and are up to date. I am sure that a review of the statements enclosed will substantiate our statement that we can expect proper management under the multiple use concept providing we have cooperation between State agencies, federal agencies, and an alert public.

In conclusion, we would like to emphasize that we believe the multiple use concept of resource management is the most practical and the most basic approach to resource management, both of our land resources and water resources; but we would also like to emphasize that this will require sincerity and viligance on the part of the agencies involved, both federal and state, and the people of the State, including the various conservation groups and industry, and all who may become involved in the use of our resources.

We would also like to once again emphasize that we feel very strongly that the federal agencies should and must be included as parties in this program of pollution control and estuarine management throughout the entire State of Alaska.

Again, we appreciate the opportunity to submit this statement.

Sincerely yours,

A. W. Boddy
Executive Director
Alaska Sportsmen's Council

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Enclosures

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Statement of the Bureau of Sport Fisheries and Wildlife on Impacts of Pollution on Alaska's Coastal Waters

The bird fauna of Alaska's coastal zones is unmatched anywhere in the Northern Hemisphere for numbers and variety. Birds that range to both coasts of North America, South America to Cape Horn, New Zealand, Tasmania, Eastern Asia, and the islands and seas in between are found in Alaskan waters at various times of the year. Birds that nest across half the Arctic from Victoria Island, in Canada to the Taymyr Peninsula in Siberia migrate along the shores of Alaska. The coastal waters of Alaska are important to nesting birds, migrant birds, and wintering birds numbering many millions. Uncontrolled pollution in Alaskan waters thus could affect the birds of nearly one-third of the world.

The waters of Alaska may well be the richest waters in the Northern Hemisphere. This is reflected by the lage commercial fishery that is being developed by both foreign and domestic interests. There is nothing of such magnitude on the Asian Continental shelf or in the Atlantic. Likewise, the waterbird resource is more varied and profuse here than anywhere else in the Northern Hemisphere. Of the 321 species of birds commonly found in Alaska, about half are waterbirds. With few exceptions this bird life is present in untouched pristine abundance.

The value of waterfowl using Alaska's coastal regions is well recognized. Such species include the entire world population of Black Brant, Cackling geese, and Dusky Canada geese, as well as a major portion of the rare Trumpeter swans, Whistling swans, Emperor geese, Whitefronted geese, Vancouver Canada geese, and four species of Eider. Large numbers of valuable Pacific Flyway ducks also use these areas for migration and nesting. It is more difficult to assess the value of the millions of shore birds, colonial nesting seabirds, gulls, loons, and other waterbirds that migrate and nest, feed and rest in the estuarine areas of Alaska.

That these birds are valuable to man is reflected by the treaty for their protection between Canada, Mexico, and the United States. These values are also recognized in Russia, Japan, and other Pacific countries, who have protective laws for birds that frequent Alaskan waters during a part of each year.

The bird populations of the North Pacific have scientific value that is generally not recognized. In sharp contrast to the North Atlantic, where the effects of a long established human population, the oil spills of two World Wars, and a variety of other pollutants have probably left no bird population unscathed, North Pacific bird populations have generally survived to the latter half of the twentieth century in priscine abundance.

Pollutants in Alakan waters have not made any drastic inroads on the abundance of bird populations. Pesticides have been confined to just a few areas, but wastes in the water now seem to be increasing. In the past year, birds have been killed in Cook Inlet by oil emanating from the oil industry and birds have been killed in the Bering Sea by oil, probably from the vast foreign fishing fleets. The need for specific information on bird habits and distribution is therefore immediate.

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Although we do know something of the general distribution of Alaskan birds, we do not have detailed information on most of the thousands of estuaries and bays in the State. There are a few areas such as Izembek Bay where bird life is so abundant that we can assume that any pollution at all would be destructive. The other bays on the north side of the Alaska Peninsula, the tidal flats of the Stikine, Copper, and Yukon Deltas, and several enormous sea bird colonies may likewise be so valuable for birds that any form of pollution should be avoided. These are areas where the highest and best use of the estuaries zone may be found in their value to wildlife and fishery resources.

In most other areas, with our present knowledge, it is not possible to predict the effect pollution or other human activity might have on any specific bird population and thus to judge their value.

As industrial activity increases in Alaska, it is imperative that we do have detailed information on all the resources, both biological and geological. We need to determine the habits and distribution of birds within areas where other valuable resources are found so that we can properly weigh the value of such bird life against the value of other resource development. Above all, we need to know the pattern of bird life so that we do not find that we are sacrificing the bird resources for the quick development of another resource. The Bureau of Sport Fisheries and Wildlife should initiate special studies to develop bird information and to make it available to those who are using the coastal waters of Alaska for any purpose. Without this information, there can be no assurance that other uses of the coastal zone can be developed in a manner compatible with its outstanding value to bird life.

Studies of the present and future distribution of possible estuarine pollution sources, as well as its effects on bird life and other resources, are essential to proper planning for the use of our estuarine area.

Our intensive surveys over many years have shown that several marine mammals are commonly associated with estuaries for these are the locations of superior food resources and sheltered waters.

The bulk of the worlds sea otter population is found in the coastal belt from Prince William sound to the end of the Aleutian Chain. Highest populations of this valuable marine mammal appear in estuaries or in the immediate vicinity. These animals are particularly vulnerable to the influence of pollution. Contact with oil spills distroys the insulating qualities of their fur and results in death. Sedimentation, as for example glacier silt, causes distress and is intolerable in their environment.

The harbor seal, a resource of great value to the State as a subsistence item and for the hide and other products, is harvested in greatest numbers from lambing grounds usually located in estuarine areas. We know nothing of its vulnerability to pollution, yet the influence to its fisheries food sources will certainly be detrimental.

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The beluga whale, an important item in the food of native people, ranges far into estuaries in a search for food in the course of salmon runs. Walrus are often observed feeding about the outlet of bays, such as Izembek, during the winter period.

Of the land mammals, mink and land otter commonly range in the vicinity of estuaries. The finest mink of North America are taken from the Yukon-Kuskokwim Delta region.

Brown bear range in coastal areas at certain times of the year. The best quality bear range on Kodiak Island and are found in the deeply indented bays and fiords that provide superior feeding conditions.

Alaska's coastline provides hundreds of estuarine areas. These vary greatly in character from the deep fiords of southeast Alaska to the vast tidal marshes bordering the Bering Sea. A system review, however, indicates that all are necessary to the rich fisheries and wildlife resources of Alaska.

The actual recorded effects of pollution on estuaries in past years is limited. There is no way of estimating damages done by oil tankers and military operations in the Aleutian Islands during World War II, shipwrecks leaving behind untold quantities of oil throughout Alaska shores, foreign fishing, oil and other effluents from American fishing vessels, boats, ships, and ferries as well as the devastating effects of the pulp, cannery, industrial, sewage, and oil exploration of the past few years. A few of the factual records we do have indicate severe damage to natural resources. The wreck, Ekaterina G, at Adak discharged oil for over a year in a sea otter population. At Simeanof, Unimak, Attu, Kiska, Ulak Island, and Amchitka, oil discharged from wrecked ships took a toll of sea otter, and bird life. Military operations on Amchitka Island have destroyed several stream systems through sedimentation and introduction of foreign material. Cannery operations, such as the King Crab industry at Kodiak, have caused total pollution of the harbor, making it unfit for further cannery use. Streams, such as those at Platinum have been destroyed by mining. Domestic sewage is making inroads into fragile resources of Izembek Bay and other estuarine areas. We are well aware of the effects of the oil industry in this unique estuary of Cook Inlet and have tabulated the known oil spills and effluent discharges of the past two years. The loss of an estimated 4,000 ducks in December 1967 is negligible compared to what a similar spill would accomplish during peak migration periods in the spring and fall. There has been Statewide concern over the pollution connected with the logging-pulp industry of southeastern Alaska. Already several bays have been altered, fish runs affected and other animal life destroyed because of sedimentation and light controlling factors of log booms. The effects of industry pollution is in its infancy in Alaska; however, already serious consequences have affected our natural resources and many with permanet effects.

The Alaska coastal zones will continue to attract industry, commercial sites, canneries and shipping ports for the resources of the Interior. The oil industry continues its search for the rich deposits known to be under coastal waters.

Sport and commercial fishing, including shellfish harvest, will continue to expand in these areas. The recreational potential is being pursued as outlets for the more populated areas. A proposed road to Whittier will open up the entire Price William Sound to sportsmen. Valdez, Haines, and Seward are already playing host to a growing sport fishery with an economy based on boat rentals, and sports shops. These recreational prospects will increase with the population growth and in turn become one of the most valuable income resources of the State.

Many of the uses of estuaries are not detrimental or consumptive in nature and thus may be continued on a sustained basis. These include the support of wildlife and fish populations, commercial fishing; recreational uses including waterfowl hunting, sport fishing, boating, camping and the enjoyment of aesthetic and scenic values; scientific study of biological and geological phenomena; and the support of adjacent sea life.

Other uses such as navigation, discharge of wastes, developments associated with the extraction of resources, such as timber and oil need not adversely influence the basic resources and current uses if properly conducted.

Fisheries and wildlife resources have long been a major segment of the economy of Alaska. The social and economic importance of recreational uses can only increase these vital uses. Proposed detrimental uses must be carefully evaluated in terms of possible adverse effects to basic biological values and beneficial uses.

The economic and social values of estuaries reach all segments of Alaskan society. Fragmented jurisdiction, responsibility, and projected use involve all levels of government, private organizations, institutions and individuals. Coordination of all interests will be required for greatest long-term beneficial use. Management decisions must be founded on broad, basic needs found through studies and the consideration of the impact of proposed uses on the high values currently present in unmodified condition. A possible mechanism for the determination of management policy may be through an Estuary Commission with representation by Government agencies, industrial interests, and citizens organizations.

Currently, there is not available the basic data on fish and wildlife resources to form the basis for reasonable management judgment on the majority of estuary areas in Alaska. Substantial wildlife use data must be obtained for all areas. Major emphasis must be given to the nature of food resources that are basic to wildlife use and to the probable influence that proposed industrial use may have on these resources. For example; this Bureau, over a period of three years, conducted an investigation of the eelgrass of Izembek Bay, the world's largest unit of eelgrass growth. Findings demonstrated that the eelgrass of this Bay was necessary to support a major segment of the Pacific Coast waterfowl, as well as providing the basis for a vast food chain of further benefit to large fisheries resources and marine mammals. This growth was found to thrive only within a narrow range of temperature and water conditions and is thus particularly susceptible to damage from the adverse influences of pollution and sedimentation.

In varied degree, similar fish and wildlife and habitat studies will be required for representative estuarine areas throughout Alaska.

While the major concern expressed in this statement relates to birds and other wildlife forms, it should be clearly understood that we are equally concerned over the protection and proper management of Alaska's coastal fishery resources. The Bureau of Commercial Fisheries is the Fish and Wildlife Service representative, which has been active in and is most knowledgable of the Alaska Fisheries. We share in, and most wholeheartedly support, the concern and suggestions expressed in that Bureau's statement at these meetings.

Table 1. Observations of Oil or Refuse in Cook Inlet Resulting From 47 Random Daylight Flights, June 1966 to April 1968.

Type of Observation	No. of Observations	Percent of Flights
No significant oil or refuse seen 1/	16	34.0
Oil observed in Seldovia Bay--not from oil industry	2	4.3
Observations of oil pollution		
Ballast pumping	2	4.3
Spills or leaks from shore facility	6	12.8
Pipeline breaks	1	2.1
Spills from permanent platforms	8	17.0
Spills from drilling vessels and "jackup" rigs	1	2.1
Oil from unknown source	7	14.9
Sub-total oil spills observed	25	53.2
Garbage and pallet boards		
From permanent platforms	2	4.3
From drilling vessels	1	2.1
From unknown sources	1	2.1
Sub-total garbage spills	4	8.5
GRAND TOTAL	47	100.0

1/ On six of these flights iridescent sheens were reported in connection with drilling operations. These are assumed to result from waste drilling mud or washing down of drill stems, etc. We generally do not record such sheens, because they can be observed on almost any trip down the Inlet.

Table 2. Oil or Refuse Observed in Following up 53 Reported Incidents [1/]
March 1966 to April 1968.

Type of Observation	No.	Percent of Total
No oil or refuse found	1	1.9
Observations of oil pollution		
Ballast pumping	2	3.8
Spills or leaks from tank ships	4	7.6
Spills or leaks from shore facility	4	7.6
Pipeline breaks	8	15.1
Spills from permanent platforms	8	15.1
Spills from drilling vessels and "jackup" rigs	5	9.4
Spills from small work boats	2	3.8
Small spill from shore facility	1	1.9
Oil from unknown source	16	30.2
Garbage from oil rig	1	1.9
Debris along shore	1	1.9
Sub-ttoal oil or refuse observed	52	98.1
GRAND TOTAL	53	100.0

[1/] Each incident is included only once, even though it may have been observed several times.

Table 3. Estimated Significance 1/of 25 Oil Spills Included in Table 1.

	Number	Percent
Spill contains dark ropy masses more than 1/2 square mile in area or more than one mile long	7	28.0
Spill contains dark masses 1/8 square mile to 1/2 square mile in area or 1/2 to one mile long	2	8.0
Other oil spills observed	16	64.0
TOTAL	25	100.0

1/ Based on description of spill made by observer at time of observation.

Table 4. Estimated Size of 51 Oil Spills Shown in Table 2.

Estimated Size of Oil Spill 1/	No. of Oil Spills	Percent of Total
0-24 bbl.	11	21.6
25-49	3	5.9
50-99 bbl.	4	7.8
100-999 bbl.	3	5.9
1,000 + bbl.	5	9.8
Size unknown, probably significant 2/	11	21.6
Size unknown, probably small	7	13.7
No estimate	7	13.7
GRAND TOTAL	51	100.0

1/ Size estimates based on inspection by U. S. Coast Guard and others or on reports of oil company involved.

2/ Based on report that spill contained dark masses of oil and was more than 1/4 square mile in extent.

APPENDIX A

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SUICIDE IN THE SHALLOWS*

by
Wesley Marx

A mile from my home in California lies a cradle of the sea called Upper Newport Bay.

Marsh grass rims this cradle; a shallow blue-green sheet of water covers its mud-flat bottom. I cannot see them but within the blue-green water dart thousands of tiny, wriggling forms of life which will grow into the ocean's next generation of fish. For eons, the young of the ocean have been borne here by their parents or by ocean currents that meander in from off-shore spawning grounds.

Yet much of this sea cradle will soon lie beneath a blanket of dirt. Its gravestone will be a luxury home development whose occupants may someday wonder why the oceans off the United States no longer abound with tarpon, snook, croaker, menhaden, flounder, bluefish, drum and life in general.

This sterile spectre arises from a misconception of incalculable consequences. While the ocean regime may appear to halt at the shore in the crescendo of surf, its vital processes infiltrate quietly into our bays, sloughs, inlets, sounds, salt marshes and lagoons. These rambling coastal niches, where salt water meets the sweet water of land, are called "estuaries". While some estuaries, such as the glaciated fjords of Alaska--are on the grand form, most are sprawling mazes clogged with marsh grass, criss-crossed by channels and bottomed with mud. Yet these rather mundane-appearing places must rank with our forests and our rivers as indispensable natural resources. Neither of the latter two can come close to matching the life-giving capacity of the estuary.

This capacity springs from the surprisingly calm collision of sea and land forces that characterize an estuary. Here ocean tides and river currents circulate enriching nutrients. An estuary is nature's grand nutrient trap. The shallow, sprawling nature of the estuary provides maximum exposure to energy-giving sunlight. Amidst these optimum conditions, the roote plants of the land and the drifting plants of the sea (plankton) combine in a virtual explosion of organic productivity. Thick beds of salt meadow grass, spike grass, sea lavender, switch grass, bulrushes, cordgrass, cattails and sweet grass thrust up from mud mazes.

More productive than land. The noted ecologist Eugene Odum finds that estuaries are twenty times as productive of food as the open sea, seven times as productive as an alfalfa field and twice as productive as a corn field. And all this accomplished without the aid or attention of man.

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* Published in the June-July 1968 issue of the National Wildlife Federation magazine "National Wildlife".

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The person who stands beside a salt marsh reveling in its solitude is actually standing beside a powerful biological engine driven relentlessly by winds, tides, currents and sunlight. It is this organic productivity which the ocean regime finds so vital in nurturing marine life. On the open sea, young fish must forage over great distances for fare while dodging sharks and other marine bullies. In an estuary, currents serve to concentrate food matter for young fish while eelgrass shields them from bullies.

Besides nursing tarpon, flounder, bluefish and crustacea like shrimp, the estuary serves as a complete habitat for other marine forms. Minute diatoms swirling about in the tidal flux may suddenly find themselves impaled on the sticky gills of a creature that pumps eight gallons of estuarine water through its system each hour--the oyster. The nutrients extracted by this pumping nurture his soft meat and hard shell. Clams, scallops and mussels are other shellfish who need move little or not at all amidst the swirling richness of the estuary.

To another spectrum of marine life, the estuary is a vital gateway--if not an enriching stopover--between river spawning grounds and oceanic pastures. Anadromous fish like salmon, shad, striped bass, alewives and sturgeon all pass through estuaries, first in the body of a parent, then on their own fledgling fins.

Support birds, too. From the sky above descends another spectrum of marine life, the shore birds. And song birds and waterfowl as well. "Whistling swans play hopscotch across the Great Lakes every fall to enjoy the wild celery in Chesapeake Bay," observes Dr. Alfred Etter. "The teeming life of coastline mudflats provides the energy for godwits, curlews, sandpipers and plovers to appear on the Great Plains a few days later, hungry for grasshoppers."

The estuaries, with their life-giving capacity, are thus as vital a part of the ocean regime as the tide-nudging moon. Yet traditionally we have not appreciated this factor, even though two-thirds of our ocean catch is estuary dependent.

Much of our population lives on or near the coastline, and a tragic collision between human geography and natural geography results. San Francisco Bay makes the San Francisco-Oakland area one of the most charming urban regions in the world--part peninsula and part ocean bay. The Bay also once served as a vast cradle of the sea.

At one time, the Pacific Coast's largest commercial fishing fleet docked in the Bay. Yet today no commercial fishermen seine the sunlit shallows. As a civic cesspool, the Bay receives the discharges of over 80 sewage outfalls. Daily, some 60 tons of oil and grease form rainbow slicks and paralyze the nerves of striped bass. Acid wastes burn salmon gills. Chemical effluents disrupt the normal development of fish eggs and fishermen catch freakish flounder. Dredges bury fish habitat under silt avalanches.

As garbage dumps, marshes that once nurtured eelgrass now exude the rotten-egg smell of putrification. As a real estate reservoir, tideland habitat now lies buried beneath apartments, shopping centers, ball parks and airport runways. A third of the Bay--some 257 square miles--has been reclaimed. The Bay that once provided 15 million pounds of oysters annually no longer supports oyster production. The Bay that once provided 300,000 pounds of clams annually no longer supports clam production. The Bay that once provided six and one-half million pounds of shrimp now only produces 10,000 pounds annually. The birthright of millions of fish has been stolen.

Goodbye, Newport Bay. The cradle of the sea near my home is much more modest in size and reputation. Yet its demise will be epochal. "Formerly six substantial marshland regions existed in Southern California," observes Professor Grover Stephens, chairman, Department of Organismic Biology at the University of California at Irvine. When the marshland is filled, the shore bulkheaded and the channels dredged for power boats in Upper Newport Bay, the last such marshland will be a memory. The inclusion of a public marina and a "marine stadium" hardly soften the hard fact that the development plans, according to a staff report by the California State lands Commission,"convert public waterways into a captive waterway primarily for the use of the private residential boat owners who would occupy the created area and dominate the bay." Recently, a citizens group formed to appeal Upper Newport Bay's fate to Federal conservation agencies, and the Corps of Engineers may hold a public hearing on issuance of a dredging permit.

On a state-wide level, 67 percent of California's estuarine habitat is a memory.

The rate of estuarine destruction on the Atlantic and Gulf coasts is lower. The estuaries in the east are not any better appreciated; it is just that there are more of them to alter. The South Atlantic and Gulf coast, from Cape Hatteras to the Mexican border, is an almost continuous estuarine area. Yet the tribulations of San Francisco Bay haunt Galveston Bay in the Greater Houston area, Florida's Tampa Bay, the Prince Inlet in the Charleston area, the Savannah River estuary in Georgia, and Pamlico Sound in North Carolina.

North of Cape Hatteras, there are fewer estuarine areas, but even more destruction. Massachusetts has lost 20 percent of its estuarine and tidemarsh habitat, according to John Clark, president of the American Littoral Society and author if "Fish and Man." Connecticut has lost 50 percent and has but 20 square miles left. Between 1954 and 1964, 29 percent of Long Island's marsh and shallow coastal habitat was "obliterated" according to the United States Fish and Wildlife Service. "Obliteration" can take many forms: Even the droppings from duck farms pollute oyster beds in Long Island's Great South Bay--and keeps oyster harvesters out of business.

What estuaries we do not bury may bury us instead. In the late 1950's New York City's hepatitis rate increased sharply. Many victims of inflamed livers remembered consuming oysters from New Jersey's Raritan Bay. They tasted oily and their meat was greenish. Oil wastes in the bay had provided the seasoning while copper wastes contributed the color. These oysters--steeped and marinated in pollution--were inflaming the livers of New Yorkers. Today, the bay oysters lie in quarantine. Nature's grand nutrient trap is becoming "a natural pollutant trap", a trap for all the environmental evils and ecological sins of man," noted Frank Di Luzio, former Assistant Secretary of the Interior for water pollution control.

Congressman Dingell speaks out. This concern has finally penetrated the corridors of Congress. "These valuable estuarine areas are rapidly disappearing from the face of this earth on this continent," observes conservationist Congressman John Dingell of Michigan, chairman of the House Subcommittee on Fisheries and Wildlife Conservation. "I think it is our responsibility to act now to save our remaining estuarine areas from the inexorable and ruthless encroachments of our modern civilization." The President's National Council on Marine Resources rates control of estuarine pollution as a priority program.

This high-level concern recognizes the need to better balance the natural and industrial values of the estuary. However, translating this concern into action can be a task of formidable magnitude. And first we must hurdle our own ignorance. While we may be able to recognize the natural values of an estuary, we don't know enough about the stresses and tolerances of the biological engine that makes it all possible. The circulatory currents that help trap food matter for young fish can't tell the difference between nutrients and pollutants. A sewage outfall that discharges fresh water, or a dam that restricts fresh water inflow, can alter the critical mix of fresh and salt water that estuarine creatures need. Thus, even fresh water can become a pollutant!

We must better understand such relationships; understand them so well that we can plot them with precision. The Department of the Interior and the Corps of Engineers are now creating a model of Chesapeake Bay, which is fed by 100 natural tributaries and a host of artificial ones, like sewage outfalls. The model will help predict and balance the impact of sewage, dredging projects and dams on the vast Chesapeake estuary. Such models are no panacea for estuarine conservation. They only reflect the sophisticated attention that estuaries need if we are intent on enjoying both their natural and industrial values. In all, some 22 fields of specialized knowledge are needed to even evaluate the character of an estuary.

Our present approach is wrong. Estuaries therefore need management as comprehensive as that given to our parks, farmland and forests. But if the biological nature of an estuary is complex and demanding, its political nature is even more so. Traditionally, estuaries have not been governed as complete marine systems but as subdivisions of political systems on land. Thus, some 90 communities and a host of private and public agencies use San Francisco Bay with little reference to each other's needs and the general health of the Bay.

Unfortunately, such exploitation is a deeply rooted custom. The landlord of an estuarine area profits little by conserving it--unless he has a fishing fleet mammoth enough to corner the fish nursed by the estuary. On the other hand, he profits greatly by altering it to such purposes as real estate development.

While formidable, the obstacles to estuarine conservation are by no means insurmountable. Concerned that San Francisco Bay would ultimately shrink into an industrial gutter, a group of interested citizens formed the Save San Francisco Bay Association. The Association helped inspire a study of the Bay's condition by Professor Mel Scott of the University of California at Berkeley. Armed with this study, the Association focused public attention on the plight of the Bay, and stressed how the general public was being deprived of the recreational and fishery values. When local officials continued to condone harmful exploitation, the Association went over their heads to the State Legislature.

In 1965, the Legislature created the San Francisco Bay Conservation and Development Commission. The Commission, composed of local, State and Federal officials, is to evolve a master plan for the Bay that relates conservation to development. The Commission is empowered to veto projects in the planning interim. This praiseworthy precaution recognizes that prolonged studies can kill estuaries just as easily as acid wastes.

The Bay is already beginning to revive under this new appreciation. Upgraded waste treatment standards have improved portions of the Bay. The clampdown on fill projects provides an opportunity to insure survival of remaining precious marshland. While formidable legal and technical problems--particularly in waste disposal--must still be solved, the Bay promises to become a symbol of protection rather than desecration. A cradle of the sea that was fast becoming a ghost cradle has won a reprieve. Fish will not be the only winners. Commercial fishermen, sport fishermen, swimmers, water skiers, bird watchers, waterfowl hunters, hikers, wildlife lovers, marine biologists and children awakening to nature will win, too. An estuary has many admirers; today it needs them as defenders.

In 1965, Massachusetts enacted a Wetlands Protective Act which empowers the State Department of Natural Resources to approve or disapprove all estuary alterations. The Act extends eminent domain power for the purchase of endangered estuaries, and also provides compensation to tidelands owners in cases where Department restrictions amount to land-taking. A tideland owner should not be made to carry the burden of maintaining what amounts to a public resource. Rhode Island has also passed similar legislation.

Congressman Eckhardt's Fight. Such foresight is commendable and, hopefully, pace-setting. (In disappointing contrast, Congressman Robert Eckhardt of Texas compares the estuary vigilance of the Texas Park and Wildlife Commission to "a gar guarding the fishing hole". The hard-driving young congressman is trying to prevent the burial of Galveston Bay's oyster fishery by the huge--and politically-powerful--shell dredging industry. Though local and State conservation groups, led by the Sportsmen's Club of Texas under Region 8 Director Henry LeBlanc, are joining the fight, they face an unusually complicated set of political and financial considerations. The companies that dredge the shells are far more powerful than their local opponents. The State Fish and Game Department enjoys a good financial return from dredging permit fees. Highway and other building projects depend on the shell for concrete. The many interests tangle into a real Gordian knot, and while conservationists work on it, the dredges continue to gouge hundreds of tons of shells from the floor of Galveston Bay, leaving in their wake a sterile trench where no live oyster can survive, and spreading a silt fallout that smothers live oyster beds for miles around their operations.

However, such hard work at State and local levels can be nullified at the Federal level. Many local and State agencies in New York now seek to halt the relentless dredging of Long Island's estuaries. Responding to this concern, the United States Fish and Wildlife Service recommended that 21 permits for dredging in the Long Island area be denied in the period between 1964 and 1966. The Corps of Engineers, responsible for issuing permits, overruled the Service in each of the 21 instances. Concluded Long Island Congressman Herbert Tenzer, "The primary responsibility of the Corps of Engineers is to insure that navigation is not impaired and as a result that agency has not protected the natural resources which reside in estuarine areas of the Nation."

Efforts are being made to let the Federal Government play a more constructive role in estuarine conservation. The Water Quality Act of 1965 authorizes the Interior Department to control pollution in estuaries as well as river systems. Secretary Stewart Udall has already convened thirteen enforcement conferences dealing with critical estuary situations, including Raritan Bay, Great South Bay and Galveston Bay. The Corps has reached a Memorandum of Understanding with the Department of Interior to pay closer attention to fish and wildlife values in granting dredging permits. (The Corps' power to deny permits other than on navigation grounds is being tested in court by those same Galveston shell dredging interests.)

The Dingell-Kennedy Bill. However, these actions do not satisfy such concerned defenders of estuaries, as Congressmen Dingell and Tenzer, and Senator Edward Kennedy. They have authored legislation that would underwrite needed research into estuary ecology. The legislation would give

Interior equal status with the Corps in granting dredging permits. (This policy would be extended to the Great Lakes area, where Corps dredging projects jeopardize the Nation's best preserved urban waterfront, the Chicago lakefront.) The legislation would also foster a National Estuarine Area system in cooperation with local and State agencies. Concern has been expressed that this latter provision would grant too much power to the Federal Government. In testifying in support of this provision, Executive Director Thomas L. Kimball of the National Wildlife Federation said, "We feel that requirement that each recommendation for designation as a 'National Estuarine Area' be approved by Congress is ample protection against any possible arbitrary moves to bring these areas into Federal control."

The testimony of one witness before Congressman Dingell's subcommittee helps underline the timeliness of such comprehensive measures. Clyde Slease, spokesman for the National Sand and Gravel Association, said his industry needs access to 42 billion tons of sand and gravel in the next 30 years. This is a lot of sand and gravel, but the Association has already pinpointed a likely source: "Estuaries near such metropolitan centers as New York City, Baltimore, Washington, Norfolk, Richmond, Mobile, New Orleans and Philadelphia offer a principal source of sand and gravel for the construction industry in these cities," testified Mr. Slease. Mr. Slease argued against the Dingell-Kennedy legislation as opposing "an inoffensive use such as sand and gravel dredging". While some interests would reduce estuaries to bottomless quarries, other interests would fill them up to create real estate. To expedite this process, a California State legislator advocates setting back the boundaries of an estuary from the traditional mean high water mark to the mean low water mark. This would effectively legislate the intertidal right out of existence. It anticipates the bulkheading of our coastline.

The challenge of estuarine conservation is great, both on a scientific and political level. But so are the stakes: the birthright of our favorite marine life. If we do deny the sea its cradles, we will be denying our children a means to survival. John Clark, in "Fish and Man", observed "With the world now rapidly approaching a time of widespread food shortage, we surely cannot afford to carelessly destroy these rich areas that are so highly productive of protein foods."

And the sea is not alone in its need of estuaries.

ANCHORAGE MEETING

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MR. E. K. DAY

We are about fifteen minutes late already, so I think we had better get started. Ladies and gentlemen, I am E. K. Day, Director of the Alaska Water Laboratory of the Northwest Region of the Federal Water Pollution Control Administration.

I want to extend a hearty welcome and express my sincere appreciation to all of you who have taken the time to attend the hearing and express your views on this subject, which we feel is of vital importance, not only to Alaska, but to the whole nation.

Although the meeting is sponsored by the Federal Water Pollution Control Administration, it is your meeting and it is your views that we want to hear. It is your views that we want to understand and to document. The panel here at the table is not here to pass judgment on your views or to cross-examine you. But, members of the panel may from time to time ask questions of the individual speakers in order to clarify a specific point or to guide the discussion to bring out views on some important aspect of the subject. I'd like now to introduce the members of the panel.

First of all, our co-chairman for the hearings, Secretary of State Keith Miller representing Governor Hickel.

Next -- we are not going in sequence here -- but, Mr. Howard Gray, the Tideland Supervisor for the Division of Lands, Department of Natural Resources.

On the end, Mr. Al Wastler of our office of Estuarine Studies in Washington, D.C., which is responsible for the direction of the National Estuarine Pollution Study.

And at my left hand Mr. John Vlastelicia of the Technical Programs Staff of our Northwest Regional Office of FWPCA in Portland, Oregon. Mr. Vlastelicia is the Regional Coordinator for the National Estuarine Pollution Study.

Most of you, I am sure, already know the background and the specific purpose of the meeting. For those of you who may not, let me summarize it briefly.

The Congress has recognized the need to protect our estuaries. In the Clean Water Restoration Act of 1966, the Congress directed the Secretary of the Department of the Interior, in cooperation with the many public and private interests concerned, to conduct the National Estuarine Pollution Study and submit a report by November, 1969, which would include, ". . .recommendations for a comprehensive national program for the preservation, study, use and development of the estuaries of the Nation, and the respective responsibilities which should be assumed by Federal, State and local governments and by public and private interests."

Specifically, it calls for, ". . .comprehensive study of the effects of pollution, including sedimentation, on fish and wildlife, on sport and commercial fishing, on recreation, water supply and water power, and other beneficial purposes. Such study shall also consider the effect of demographic trends, the exploitations of mineral resources and fossil fuels, land and industrial development, navigation, flood erosion and control, and the use of estuaries and estuarine zones . . ."

The responsibility for coordinating the study was assigned to the Federal Water Pollution Control Administration. This is only one of a number of such hearings that are being or have been conducted throughout the country.

The following approach is being or has been used in making the study:

1. The estuaries themselves are being examined. A composite description of the national estuarine system will be made in terms of what it is, how it functions, and how it has been damaged by pollution.

2. The social and economic pressures on the estuarine system are being studies. Resource use, and the economic and social value of each use will be documented to establish the relative importance of these factors to the estuarine system.

These first two phases will provide what we call an "Estuarine Register." This is a necessary base for the development of a management plan.

3. On the basis of these studies, recommendations will be prepared for submission to the Congress. The recommendations will incorporate all important environmental, social, economic and political factors -- and will be, in essence, a recommended management plan -- describing the estuary system of the nation and proposing a management system of authorities and responsibilities for their development and beneficial use.

The study is a big task and involves input from a number of other agencies and organizations. Perhaps of greatest importance, it involves close cooperation and input from the coastal states.

This, in brief, is the how and why of the National Estuarine Pollution Study from the Federal standpoint.

The fact that all of you are here indicates awareness of the importance of our estuaries as a national resource. I am sure that all of you are even more aware of the importance of our estuaries in Alaska and the vital importance of making the right decisions now as to how these resources should be managed and to provide for their greatest beneficial use. In Alaska we are fortunate to have a large percentage of the marine estuaries of the United States and we are even more fortunate that they are as yet relatively unspoiled. In recent years we have seen many estuaries in our nation lost to beneficial uses through pollution, conflict of interests, and lact of effective management. Many of them have suffered irreversible effects of man's activities.

In Alaska, because of its many estuaries, because the characteristics of the estuaries are different, and because of the present state of development of Alaska, this study to determine how the estuaries will be managed is of extreme importance. In Alaska we still have a change to do it right, but there is no time to waste in making the right decisions and taking the right actions. The Congress, we feel, has wisely asked for recommendations before it legislates. It is important that your views be made known, and this, in brief, is the reason for the hearings.

Now, I would like to ask Secretary of State Keith Miller to take over and express the State's views on the National Estuarine Studies.

SECRETARY OF STATE

KEITH MILLER

Thank you, Mr. Day. Since the primary reason for this meeting is for the audience to express its views to us, I will say nothing more than a very brief and very broad outline of the State's policy in this regard.

The State of Alaska recognizes the need for a wise management policy and preservation of our water resources. We also recognize that the State's policy will be influenced to a considerable degree by Federal laws and regulations. The State of Alaska is in a rather unique position of being able to avoid many of the pitfalls and sins of commission and omission in the lower '48 over the past many years.

However, at the same time the State does take the position that this policy of management of our water resources, estuarine and otherwise, should be a realistic one, taking into consideration the past, present and future economic development of our State. And with that statement, I will turn it back to you, Mr. Day, for the participation by the group.

MR. E. K. DAY

Thank you, Keith. I might mention before we start that all of you who have registered have indicated whether or not you would like to have a transcript of the meeting. We do have Mr. Jones taking the hearing who will prepare a transcript and copies of the transcript will be made available to all of those who have indicated that they would like to receive a copy later on. I don't know just when it will be.

We have quite a lot of ground to cover here, so we might as well get on. We have a number of interests represented here, so we are going to mix the things up. First we would like to call on Mr. Lowell Thomas, Jr., State Senator.

MR. LOWELL THOMAS, JR.

I see you are getting rid of all the officials fast. Dr. Day and Secretary Miller and ladies and gentlemen. I really came along tonight just to lend whatever little moral support I could to the mission of your group and just to say a very general word personally.

I guess I can't help but also say it as a member of the State Senate. I felt for a long time that one of the most important things facing us in Alaska these days as we go with our economic development is that we use and observe sound measures of conservation. And I know that Secretary Miller has just said that and he feels very strongly about this.

Also, the Governor not long ago in a speech -- and I can't recall just where it was made -- in talking about his plans for economic development, made the statement that we were going to, as a State, be very careful about conservation measures as we went about our growth. I think this is extremely important.

I'd like also just to add a few things that were said by probably the most famous man in the field of aviation, who just happens to be very keen on conservation these days and that is General Charles A. Lindburgh who came and spoke to a joint session, as you all remember I am sure, a few months ago.

And in doing so, it was the first time that he had stepped out of the shadows to speak publically in over ten years. And Lindburgh in speaking to the legislature would not talk about himself, nor would he talk about aviation, but only about conservation. And he said, and I take this as a direct quote from a tape that was made of part of his talk, "I don't believe that money or effort today can be invested in any better way than in conservation activities. The field is so important. It is so open that great results can be obtained by relatively small expenditures. Emphasis in the past has been largely and quite properly on such things as university education, scientific enterprises, but not sufficiently in proportion to conservation activities. I don't think there is anything more important than conservation, with the exception of human survival. And the two are so closely interlaced that it is hard to separate the one from the other. You destroy our environment and our survival is not going to be very satisfactory."

I would like also just to say that I believe that one of our most important industries over the long haul in Alaska is going to be tourism. It will be here long after some of the other industries have gone. I have just been in our fiftieth state of Hawaii and their tourism has risen from something like fifty thousand in 1954 to well over one million and in Hawaii they are very concerned about not spoiling the beauty of the island, it's aloha spirit, it's scenery and so on, with the high-rise buildings and what not, and this is a key issue in the fiftieth state.

And so I think it is most important here in Alaska that we keep in mind this industry of tourism and that in the years to come as our population in the lower states continues to boom and with the technilogical developments, more and more people are going to want to come here above all because of its wilderness aspect. And I am quite sure that we can go about our economic development and still maintain enough of this wilderness aspect that we can attract other people elsewhere in the world and offer those things that have some real value.

So, I just want to say once again, I am very happy that you gentlemen are here this evening and conducting the hearings. I just wish you all the luck. Thank you very much.

MR. E. K. DAY

Thank you, Senator Thomas. Before you sit down, I'd like to ask you to give a copy of your statement to Mr. Jones.

MR. LOWELL THOMAS, JR.

I see. Well, I have no prepared copy. I could perhaps just paraphrase it as to form and give it to him.

MR. E. K. DAY

You members of the panel have any questions of the

Senator?

MR. LOWELL THOMAS, JR.

I might just add that we have a number of members in the Legislature who feel very much the way I do too and you are probably aware of some of the measures that we have enacted during the last session.

MR. E. K. DAY

Thank you again, Senator Thomas. Now, we'd like to call on Mrs. John V. Monroe, Jr., representing the League of Women Voters of Alaska.

MRS. JOHN V. MONROE, JR.

Thank you. My remarks are also a little bit general like Senator Thomas', out of necessity. The State League in Alaska is only six months old, so we are not authorities on everything yet. I am an elected director of the League of Women Voters of Alaska and the chairman of the Water Resources Committee.

As most of you know, the League stands are the outgrowth of study, discussion and concensus by League members in local meetings. For twelve years, since 1956, the League of Women Voters in the United States has been studying water resources. With no special interest to advance except the public interest as the League sees it, the League has been trying to understand complexities of water management --

planning, administration, financing -- and on the basis of this knowledge to participate in the decisions which are citizen responsibility.

The State League in Alaska was organized in October 1967, with experienced local Leagues in Anchorage, Fairbanks and Juneau and a provisional League in Ketchikan. In six months we do not claim to be authorites, but we have become aware of certain water management and pollution problems in Alaska. We do feel that principles we have come to support in our local and national studies do indeed apply to the estuaries of Alaska.

We support comprehensive study of estuaries. Because choices must sometimes be made between alternative uses, it is important that these be informed choices. We commend you for holding meetings such as this one here this evening.

It is particularly timely in Alaska where we are just entering a time of expanded and diversified development. Cook Inlet alone demonstrates the desire and need for multiple use of a single estuarian area. Expert testimony would indicate that this is indeed possible and desirable. It also would seem that there are some additional unknowns here due to our extreme climate which will require more research and experience.

In a state which claims one-third of the nations coastline the importance of providing for conservation and development of our estuarine resources can be neither overemphasized nor considered a luxury.

As League members we have learned the value of clean water. We have learned the cost of prevention including research and planning is less than clean up. Right here in the Anchorage area we are suffering the pollution price of delay.

We think control of wastes is one of the costs of doing business. Therefore, we maintain that all who discharge wastes should be responsible for costs of cleanup. We believe that the Federal Government has a necessary role in financing water resources development, but state governments, local government and private users should share such costs, as far as possible, based on the benefits received and the ability to pay.

Thank you.

MR. E. K. DAY

Thank you very much, Mrs. Monroe. Do members of the panel have questions for Mrs. Monroe?

MR. T. A. WASTLER

I have one. Would you care to comment on the respective roles of the State and Federal Government in managing estuaries? Who should do what? I believe you mentioned financing. State and Federal financing.

MRS. JOHN V. MONROE, JR.

Yes. We see it as a combined role in management, not only of estuaries, but in other water resources problems, and coordination. I don't think then it would vary from area to area on who should perhaps be in major control of a particular spot. I know some of the problems in Cook Inlet, for example, after development began. The State League of Alaska has not been able yet to go far enough along to make any recommendations for one State Department over the other. I think we feel that the major responsibility for the management lies with the State in so far as possible.

MR. T. A. WASTLER

Well, do you think that perhaps combination of responsibilities that would work in other states or regions of the country might not work in Alaska, for example? In other words, that Alaska might require a different combination of responsibilities than other areas in the country?

MRS. JOHN V. MONROE, JR.

I can see that it might. I wouldn't know that we would think that definitely at this time. I think the feeling that we have learned to date in trying to get into this ourselves is that we certainly think some coordination -- some central spot where you can find out who is in charge of which area is needed, and I think we have heard this complaint from some others also. That at this time there are many people -- there are many parts of the Federal Government involved in Cook Inlet, depending on what your problem is, and it is a little hard. There is no one place you can go and find out who is in charge of what. And that would be a beginning. A coordination of who is in charge of what. And I think in the financing, we might require a little more Federal financing than some other areas because we have a much vaster area to deal with that holds a lot of the nation's resources.

MR. T. A. WASTLER

Thank you.

MR. E. K. DAY

Thank you again, Mrs. Monroe. Now, we'd like to call on Mr. William Hopkins of the Western Oil and Gas Association.

MR. WILLIAM HOPKINS

Mr. Day, Secretary Miller, I have some rather brief remarks which are also in writing and three copies have been submitted for your use.

Our industry emphatically subscribes to the multiple use concept of Alaska's resources. Consistent with this position, it is imperative that the industry insure that its operations are conducted in a way to protect these resources and their other users.

High priority is given to the development of industry-wide policies and procedures to serve this end.

For the record, we would like to briefly outline some of the Alaska oil industry's current efforts. The major one is the housekeeping -- what we refer to as housekeeping in our off-shore operations in this hearing.

1. Garbage is separated from other refuse on offshore platforms and processed through disposal units before introduction into inlet waters.

2. Other refuse is collected and taken ashore for proper disposal.

3. Ballast facilities for marine transportation are provided in adequate capacities for the handling of contaminated ballast water. The Drift River terminal has the capacity for 90,000 barrels, and the Nikiski facility can now handle after some recent modifications 150,000 barrels.

4. Tankship and marine terminal operations are receiving the coordinated attention of the Western Oil and Gas Association and the Pacific American Tankship Association, so that all facets of the industry are joined in planning procedures for pollution abatement.

5. Strict compliance by oil company employees and contractor personnel is called for in top management directives issued throughout the industry.

As for preventative equipment, we have:

1. Automatic shut-in devices installed below the mudline in all Alaska offshore wells.

2. Floatation cells or skimming devices are now installed on all permanent offshore platforms in Cook Inlet. These installations collect wash water, machinery drippings and incidental drainage and separate the oil and greases from the water before the water is returned into the inlet.

3. Submarine pipelines are equipped with devices designed to automatically shut-off the line when pressure drops.

Contingency planning. Recognizing that mechanical and human failures and extraordinary conditions can result in accidents, the industry is constantly seeking more adequate means to meet contingencies. Intra-industry efforts and cooperation with governmental agencies has resulted in the following results and progress:

1. An emergency procedures plan for Cook Inlet has been developed and distributed to all industry installations, serving to minimize the loss of life and property of those operating in the inlet.

2. The industry is working with the Coast Guard in developing a "Contingency Plan to Minimize the Effects of a Spill of Oil or other Hazardous Substance in Alaska and Adjacent Water."

3. Control and clean-up methods are sought which can be used under the difficult conditions imposed by winter ice and extreme tidal currents. A local industry standing

committee is charged with this task.

a. Physical removal methods capable of use under prevailing Cook Inlet conditions are the subject of continued research, evaluation and experimentation. No truly substantial devices have yet been found.

b. A micro-dispersant which shows considerable promise for use in neutralizing spills which cannot be physically removed has been evaluated and demonstrated by the industry committee charged with finding spill control methods. This agent, designated "Polycomplex A-11," has been recommended by the industry committee as a possible method to allow minute particles of oil to degrade in a shorter time.

The industry has requested official sanction to use this agent in the event of accidental spills until better methods are found and approved, and the industry's research continues.

4. Spill reporting has been a problem which is now showing considerable improvement, particularly as regards agencies notifying apparent sources of pollution, enabling immediate corrective action by operators.

Miscellaneous Efforts. Research to determine the hydrocarbon content of Cook Inlet waters and the inlet bottom and to determine the environment's capacity to degrade hydrocarbon pollutants has been undertaken by the Marine

Science Institute of the University of Alaska, funded by the industry through the Western Oil and Gas Association. The University's proposal was discussed with various state and federal agencies. It was agreed the study would not duplicate any studies contemplated by them and that the research would provide useful background data for all concerned with Cook Inlet.

To summarize, the entire oil industry has a vital concern for the protection of Alaska's natural resources for their full potential use by all. We offer our cooperation and solicit that of the public and the agencies whose task is to serve the public interest.

We highly favor effective coordination of all efforts to preserve the values of our Alaska estuaries, and we sincerely offer our assistance toward this end.

That is the only statement we have at this time.

MR. E. K. DAY

Thank you, Mr. Hopkins. I feel sure that you are not going to get by as easily as the previous speaker, because three members of the panel made -- flew over Cook Inlet today and visited one of the platforms and may have some questions.

MR. WILLIAM HOPKINS

I can probably ask them some then. I haven't visited the platform.

MR. H. J. GREY

You mentioned the chemical to break down certain products. Is the industry planning on having facilities available to actually clean up the oil spills in the very near future?

MR. WILLIAM HOPKINS

Mr. Grey, in the use of that particular product, which I mentioned, which is a micro-dispersant, they call it, we would be prepared to use that if we had the sanction to use it.

MR. H. J. GREY

O.K.

MR. JOHN VLASTELICIA

You have talked about the industry's efforts and then the various efforts of the State and Federal governments' part in this and the need for a chemical and so forth, but do you have any priority list or anything in mind, just from your own experience, as to what -- and thinking also of the development that is bound to come here and the kind of operations it will bring, what kind of legislation or what kind of help, or what kind of research could best be applied now in order to have a plan in the future?

MR. WILLIAM HOPKINS

Well, I can assure you that we are trying to keep abreast of anything that would be useful and helpful to meet contingencies such as the accident that I am sure you are all aware of for the future. I would say that any of the State and Federal laws which are in effect now and which may be contemplated would, of course, be met by the industry and probably welcomed.

MR. JOHN VLASTELICIA

I was thinking more, is there any lack of enabling legislation now -- say now, to conduct research? Is there a lack of funds that you know of? You have a priority list of things that needs to be done?

MR. WILLIAM HOPKINS

Well, yes, as a matter of fact. One of them was mentioned in the statement, I think, that in the Inlet area here, for instance, I think that if one agency had had primary jurisdiction coordinating the whole thing, we'd all be a step further towards the solution of the problems then we are now. As far as legislation or agreements or administration is concerned, I'd say that would be really a step forward if we had that. As far as other legislation, I don't think we are held back by law. We might be held back somewhat by the technical ability maybe to cope with certain environmental problems, but ten or fifteen years ago we couldn't cope technically with the problem of having platforms in the Inlet and, of course, those were mastered.

MR. T. A. WASTLER

I have a question, Mr. Hopkins. What do you feel would or should be the role of industry-wide institutions such as yours in management of estuaries?

MR. WILLIAM HOPKINS

I think their role should be the coordination of individual company efforts to do what is called for and to cooperate and coordinate with the agencies who have primary responsibility and, of course, this is what we hope we are doing at this moment.

MR. T. A. WASTLER

Do you think that associations such as yours would be in a position to act in an advisory capacity to both the individual companies and to the Federal and State agencies involved in approaches for controlling industry wastes and improvements in technology?

MR. WILLIAM HOPKINS

Most assuredly. I'd say we'd be very happy to lend whatever assistance we could.

MR. T. A. WASTLER

Fine.

MR. E. K. DAY

Any other questions. Again, Bill, you got off easier than I thought you would.

Now, Mr. Cliff Judkins representing the Greater Anchorage Borough Health Department.

MR. CLIFF JUDKINS

Mr. Day, gentlemen, my prepared statement is a rough draft on my desk, so I will get it in within the next week or so.

I am here representing the Anchorage Borough Health Department. I think possibly I should mention our qualifications for being here talking about estuary pollution. We are the greatest polluters of estuaries in the State of Alaska. We have a lot of experience in the need for comprehensive planning, because here about sixty years ago in 1907, when you could put all the people in the Anchorage community in this room, we were putting our sewage in Cook Inlet. Today we have a hundred and forty thousand people and we produce fourteen million gallons of sewage a day and we put seven of this in the Inlet. So, I think we are a good example for the need for some kind of planning. We probably will use up a good portion of the assimilating capacity of the Inlet that many people talk about wanting to use before they get a chance to get to it.

Basically, we support the statement that probably will be presented today by the Alaska Water Management Association. We also support the statement that was presented on June 11th in Juneau by sanitary engineers with the Alaska Department of Health and Welfare. We strongly support a section of their statement with regard to the implementation of a positive program where they discussed staff and departments with various technical personnel. We can plan and plan and plan and I have got a basement full of plans. Just stacks of them. And our basement seems to be a place where people store things and it is full of their plans. They never get implemented. The same with the State Water Quality Standards which might be used as a guideline to work with the estuary studies.

They are a decent plan. At least if they get implemented and go to work.

I think another major point that needs to be considered and it's been mentioned and will be mentioned more -- the ratios and formulas that are used to put Federal money into State and communities for programs such as these and programs such as construction programs doesn't seem quite realistic in Alaska when you consider the proportions involved here of Federal land to the vast acres of other land and the low number of people and large vast amounts of water that is available. It is here we have to do something with. It would seem to me as though we should use a formula that is somewhat different than is being used in many of the -- in the other areas that are used here now.

There's been quite a bit of discussion, some tonight and some at the meeting the other day -- and some off and on -- as to what role who should play. Well, I think it is kind of a fad now-a-days to say, "Well, the Feds ought to go away. Give us your advice and your money and leave us alone." I think we all know they are not going to do that and I kind of sympathize with Congress in giving them this responsibility. I think if we all look at what's happened in the last hundred years in the United States, there has not been one State that on it's own has been able to handle the pollution problems, irregardless of money. Even with the money they can't handle it.

I feel that the State Government most certainly should play the active role and should be the key agency. And I feel that the Federal Government should be more than just providing us funds and advising us. They should have some solid, firm, well-defined control to insure that we meet the minimum standard which they have or should set. But, we should run a uniform program and do it properly.

Mr. E. K. Day

Thank you, Cliff. Any questions from the panel?

Mr. T. A. Wastler

We anticipated everything he said.

Mr. William Hopkins

I have a question. Did you say seven million gallons of that fourteen million goes directly into the Inlet?

MR. CLIFF JUDKINS

Yes, We don't treat any of it.

MR. WILLIAM HOPKINS

What happens to the other seven million?

MR. CLIFF JUDKINS

We put it in the ground.

MR. T. A. WASTLER

Where do you get your water supply?

MEMBER OF THE AUDIENCE

Out of the gound.

MR. E. K. DAY

Now, I'd like to call on Mr. A. L. Renshaw, Jr., of the Alaska Miners Association.

MR. A. L. RENSHAW, JR.

Thank you, Chairman Day, Secretary Miller, other panel members. I don't have a prepared statement as such.

I am the Anchorage Branch Chairman for the Alaska Miners Association, a group of approximately five hundred members, statewide and stateside. We feel we are a minority group. We are an economically depressed industry and we often find ourselves in a minority position on countering legislation on pollution.

In the past we have done battle with other agencies on the quality of water in an attempt to divorce sedimentation from organic pollutants. We are, of course, very optomistic for the future of placer mining and without causing some degree of turbidity in the streams, it is virtually impossible to pursue that industry.

Alaska has a tremendous history of placer mining and of production. We have great hopes that in the future this industry will again expand. At the present time there's been a considerable effort in coastal areas, particularly on the Seward Peninsula, in the Gastineau Channel area, in the Good News Bay region for the investigation of mineral rich sand. These, if they are going to be exploited, are going to have to be dredged, so the mining industry asks for caution in the regulations as they might be promulgated as to the degree of sedimentation that is tolorated.

We can't produce these sands or these minerals without some degree of turbidity. It is a virtual impossibility. I think it is a two-pronged problem of the State Administration to see that proper water quality standards are enacted, but to promote the economic development which hopefully to a large extend must come from the ground.

I would at this point like to ask a question, if I may, Mr. Chairman. Mr. Day, will the record of this meeting remain open for some period of time?

MR. E. K. DAY

The record of the meeting will remain open for fifteen days to submit formal statements. For those who do not have prepared statements.

MR. A. L. RENSHAW, JR.

We were not made aware of this meeting until two days ago. Much of the industry representatives are out in the -- on the creek, so to speak. As a consequence I have been able to reach a number of them, but the time has not been sufficient to give representation here tonight. So, we would like the opportunity of filing some statement.

MR. E. K. DAY

My apologies. You may have that privilege. My apologies if we have failed to let you know. It was rather widely publicized by press releases.

MR. A. L. RENSHAW, JR.

We are kind of a vagabond group and we are often out in the field.

MR. E. K. DAY

The mailing list was rather broad too. I don't know why you didn't get it.

MR. A. L. RENSHAW, JR.

Yes. I would like to make several additional comments, if I may. I think it is of particular importance and it's been voiced here previously by previous speakers, that the number of agencies -- the number of officials be minimized in the supervision and control of water quality standards and this doesn't go just for the water quality. It goes for the fish and wildlife considerations too. That there are so many agencies and so much duplication that a person just about can't avoid getting into trouble with someone.

And I think this is very important if your programs are going to work in the future. That there has to be a minimum of overlapping from the various agencies.

Another point that I think is of importance is that there must be continuity between the upland regulations as they concern water and the tidal areas -- coastal areas. Real estate law is a different realm from laws that apply on tidelands. The high tide meander line is a demarkation point for two different worlds in legalities and I think it is a very important consideration that there be some continuity developed here. Because very often in -- and, of course, I am thinking particularly in a mining situation -- it maybe very difficult to draw the line or to become involved with conflicting regulations when you pass over that high tide meander line. So, I think this is a point that should be borne in mind and my recommendation there would be if some consideration could be given to the adoption of the State regulations as they border the Federal tidelands. Now, I know this wouldn't entirely be possible, but I think they should be as compatible as they can possibly be made.

Thank you very much.

MR. E. K. DAY

Thank you, Mr. Renshaw. Are there any questions from the panel? We'll then hear from Mr. William Dunslager, City of Anchorage.

MR. WILLIAM DUNSLAGER

Dr. Day, Secretary Miller, I have a prepared statement here which has been reviewed by the City Manager, who was unable to attend here this evening.

It is considered a privilige to present the goals of the City of Anchorage, Alaska's largest city, and recommend that they be incorporated into the State and Federal plans for the development of our coastal waters. Until recent years it would appear that little concern was expended upon pullution problems of our State's estuaries, including Cook Inlet. I am proud to say that the Anchorage area residents are keenly aware of our pollution problems and have taken steps to correct the local inadequacies.

The Alaskan coastal waters are important to our State and should be protected from waste. The following general guidelines should be considered when programming their development:

1. Alaskan water should be administered by Alaskans. We have no objections for the Federal Water Pollution Control Administration to review our State's administrative policies or to assist the State in carrying out those policies, but the basic controls of our State's natural resources must be left to the State.

2. The multi-purpose concept of resource development must be maintained in the planning of our State's coastal waters. The State presently has the necessary tools to accomplish this through use of its Water Quality Standards. Degradation of coastal waters should not be tolerated or substituted for necessary waste treatment. However, waste treatment should not be required for treatment's sake alone. It may be that the best use of a particular estuary would include degradation of its water quality. Complete studies on an individual basis must be obtained before the true multi-purpose concept may be applied. Alaska's existing Water Quality Standards provide adequate guidelines for resource protection and development.

3. Classification of coastal waters is necessary. However, it presents a task too large for today. Before any coastal waters are used for waste disposal, a study should be completed regarding those particular waters and the estuary

classified according to the basic concept in the Water Quality Standards as applied to the multi-purpose concept mentioned heretofore.

4. Considerable research is needed to better understand the coastal waters of this state. Alaska has over 30,000 miles of coastline which represents over one-half of our nation's shores. Our state has approximately one-third of the nation's fresh water as a natural resource. Little or no real research has been completed regarding cold water waste disposal methods, cold water pollution yardsticks and cold water estuaries.

5. The Federal Government has not carried their share of the pollution research and control programs within the State. Additional Federal funding should be allocated to Alaska. Our state contains one-fifth of the nation's land mass and one-third of the nation's fresh water and certainly contains the majority of Federally owned lands. Yet, only one-percent of the Federal funds spent for pollution control or research is spent in Alaska. It is Anchorage's strong recommendation that the Federal Government play an increased role in the financial support of cold water research and pollution control in this State.

Thank you for hearing our suggestions for inclusion in the National Estuarine Pollution Study. Your careful consideration of these points will be sincerely appreciated.

MR. E. K. DAY

Thank you, Bill. Any questions from the panel?

MR. JOHN VLASTELICIA

You mentioned a recommendation for classification of the State's estuaries and also that it will be quite a large project to tackle at this time. But, have you any ideas or feelings how this might best be accomplished and whether or not your belief for increased Federal aid might apply here anyplace? How a classification plan for Alaska's waters might be developed, who might do it and how?

MR. WILLIAM DUNSLAGER

There are several things involved. This research into cold water parameters is something that frankly is lacking. This is necessary in order to properly classify or develop any estuary in my opinion.

I don't feel that it is necessary at this time to classify all estuaries within the State, but as development begins along these estuaries, then they should be studied individually and classified. For instance, some of the estuaries may have natural pollutants that are not normally found in the other estuaries. I am thinking here of glacierbent estuaries where there is a high degree of turbidity. Perhaps these types of estuaries. There are some estuaries which are fed with swamp waters which certainly are not as clean as what we would consider some of the fresher water estuaries. Therefore, I would say they should be classed individually as development is accomplished.

Getting back to your question though, basically this research is necessary before anyone can intelligently classify these streams -- these estuaries.

MR. T. A. WASTLER

I have a question. There is a difference between research into, say, parameters which may be of particular importance in cold climates and this study is necessary on a particular estuary. According to what you have said, sooner or later someone is going to have to go into each of Alaska's estuaries and study them in order to classify them, even after the basic research has been done.

Would you care to comment upon who should be responsible for this?

MR. WILLIAM DUNSLAGER

For the actual classification?

MR. T. A. WASTLER

Or for the, let's say, technical study of a particular estuary and subsequent classification?

MR. WILLIAM DUNSLAGER

I feel that the City's position is that this should be under the direction of the State, but this would not rule out the State then seeking Federal participation and expert advice. But, I think the point here is that the State should be the mastering body seeking whatever assistance is necessary for them to develop their decisions.

MR. T. A. WASTLER

Thank you.

MR. E. K. DAY

Thanks again, Bill. Now, I'd like to call on Dr. Charles E. Behlke representing the University of Alaska.

DR. CHARLES BEHLKE

Before I begin I want to be sure here that I am speaking as myself, rather than as the University of Alaska.

Alaskan estuaries have for ages been the travel routes and catch areas for salmon. They have provided an area for the most scenic of boating pleasure since the first water borne visitors traveled through them. Probably the only pollution which these estuaries have historically received was the wastes from fish processing, limited domestic wastes, and natural impurities from tributary rivers.

At present Alaska is in the initial phases of a rapid industrial and urban growth period. New uses are being made of Alaska estuaries. Oil wells are being drilled in them. They are being called upon to assimilate wastes from the oil and limited chemical industries which have or are being established. They are being used as receivers of pulp mill wastes. Urban and military developments of increasing importance are discharging wastes into these estuaries. Much of the wastes which have been mentioned receive some form of preliminary treatment, but the point is that these are waste discharges which pollute our estuaries and make them less attractive to the historical uses of the estuaries.

We must recognize that Alaska is going to have increasing numbers of people and will probably have a rapidly expanding industrial growth. Many of the reasons for a lack of population and industry have been associated with Alaska's remoteness.

The jet age and increasing population daily make our state less remote. More people and more industry are facts which we happily face, but we must be prepared to face the problems which these factors bring with them.

Thus far the State and Federal agencies prodded by private individuals and by legislators have been aware of pollution problems and have attempted to force industry, at least, to subscribe to pollution abatement practices. We must continue to demand that good sewage treatment be enforced upon industry, but we must also become more aware of the danger of municipal and urban pollution.

The level of sewage treatment thus far required of industry and public bodies must continually be increased in those areas where there are increases of industry and consequent municipal growth. Two pulp mills in Alaska with their present states of treatment do not ruin Alaska's estuaries. One ammonia plant on Cook Inlet does little harm to that estuary. Kenai and Anchorage are not serious menaces to Cook Inlet today. However, if ten pulp mills appear in Southeastern Alaska, forty ammonia plants appear in Cook Inlet, and the Anchorage-Kenai areas grow to a population of one million people, the story is quite different. Problems of this type will arise in Alaska and we must expect them and plan for them.

Hopefully Alaska will do most of its own planning and take the lead in its water planning and management. We must, however, be cautious of outside interests and outside forces which would usurp our estuarial resources and their management. Recently an oceanographer from the University of Washington told a senate committee that Alaska estuaries should be set aside for pollution studies by oceanographers. Obviously research results obtained in Alaskan estuaries would be difficult to apply to San Francisco Bay or Chesapeake Bay. His motives showed. He was interested in obtaining a means of justifying his research program forever. He had no interest in Alaska except for the bread and butter which it could supply for him.

If Alaska, through its state agencies, legislature, and Governor's Office, will work to develop its estuaries properly, Alaska can maintain sovereignty over its waters. In addition, I am convinced that the various interests are compatible and can get along in our estuaries. This will only come through efforts on the parts of all concerned. It will not just happen.

Thank you.

MR. E. K. DAY

Thank you very much. Any questions from the panel?

MR. H. J. GREY

I have one. Do you have any suggestion on how we can improve our management of the estuaries as State agencies?

DR. CHARLES BEHLKE

I think most of the suggestions that I would make have already been made. I would obviously like to see the State take the lead in this and not have three or four different agencies confusing the issue. I would like to have one agency or one commission be responsible for planning and management.

MR. JOHN VLASTELICIA

You recognize the difference, it sounded like, between

Alaskan estuaries and maybe the nation's estuaries. Is this a real difference?

DR. CHARLES BEHLKE

The nation's estuaries are in Alaska.

MR. JOHN VLASTELICIA

I realize that. One-third of them. But, if they are different, is there enough technique available now to use as a basis for a good classification system or a zoning plan or a planning for the management of these estuaries now, or does there need to be ---

DR. CHARLES BEHLKE

A lot less. A lot less. A great deal of research should be done, but I don't really feel that we can wait for fifty years of research to be done before we plan for the rest. I'd rather see some plans made and maybe make some mistakes, but let's attempt to do it properly and not wait for years and years and years of research. Because in order to cover Alaska, research would take a long time.

MR. JOHN VLASTELICIA

Speaking of your program at the University, is there adequate means available to you now to work on some of this? I was just wondering, is there enough or is there the kind of legislation and the kind of programs presently available, either from the State or Federal Government to allow Alaska and Alaskans perhaps, or those interested to make these studies and to get them authorized and appropriations for them?

DR. CHARLES BEHLKE

No. The legislation is perhaps present, but we find great difficulties in selling our ideas. First of all, you have to recognize -- those of you who aren't familar with research must recognize that the Federal Government is our big daddy in research. It provides probably ninety-eight or ninety-nine percent of the funds for research. So we find that the Federal Government -- many of the Federal research funding agencies do not recognize the need that Alaska has. That they can't believe that our needs at present are so basic and so simple. The simple things haven't even been done. Haven't been researched in Alaska. They'd like to find things that are esoteric rather than simple things which desperately need to be done, which we cannot get the money to do. And I would like to point out here that the State of Alaska contributes greatly to research, particularly at the University. The citizens of the State of Alaska contribute more to research than the citizens of any other state in the Union. It is roughly $5.00 and some cents per year at the present towards State funded research. We are also paying Federal taxes and thereby contributing to Federal research funds also.

MR. JOHN VLASTELICIA

Would you need a different program then or a different attitude?

DR. CHARLES BEHLKE

Different attitude. The programs are probably there, but we do have difficulty getting some of these very simple things funded. And legislatively there are probably plenty of laws and plenty of things which would allow this, but we do run into this trouble in Washington and Washington is a long ways away.

MR. E. K. DAY

Thank you very much. Now, I'd like to call on Mr. Frank W. Wince, representing the Alaska Water Management Association.

MR. FRANK W. WINCE

The Alaska Water Management Association is Alaska's member association of the Water Pollution Control Federation.

Our organization respectfully requests that the National Estuarine Pollution Study Committee give consideration to the following recommendations. They represent the majority position of our organization on the management of estuary waters.

1. We are firmly opposed to use of estuaries as a substitute for needed waste treatment. We believe the State

Water Quality Standards should be used as a basis for the design of needed waste treatment facilities.

2. These Standards require the classification and identification of existing and potential uses for each individual estuary. This classification should proceed as an estuary is opened for development.

3. The estuary classification should be developed along the multiple-use concept.

4. Administration of the Standards should be performed solely by the State as long as the resulting water quality equals or exceeds the Federally approved Standards.

5. Since the State of Alaska contains more than fifty percent of the continental shelf, one-tenth of one percent of the population of the U.S., and one-third of the total water resources of the fifty states, a unique formula for Federal aid to the State for staffing, research and construction should be applied. This is particularly evident where the normal parameters conceived in warmer climates are applied to the deep, cold estuaries of Alaska. In addition, the Federal Government retains title to a large portion of the lands in Alaska. The AWMA favors the adequate protection of our water resources and feels this approach to the management of estuaries to be compatible with the economic and social development of this State.

MR. E. K. DAY

Thank you very much. Any questions from the panel?

MR. H. J. GREY

I have one question. Do you favor then State control of waters on Federally owned lands? Is this what you are saying?

MR. FRANK W. WINCE

I will speak for the group as I understand their feelings. That they do consider that the State should have this responsibility on all the land in Alaska, whether Federally owned or State owned.

MR. JOHN VLASTELICIA

Would you elaborate. This is about the second or third time now that it's been mentioned. Classification on a multiple-use concept. If they were typical estuaries such as Cook Inlet or any of them, who does the Federation see might participate in this classification and then getting now to what would be a respective State and Federal and local and industry role. Is this the kind of thing you are mentioning here when you mention a multiple-use classification?

MR. FRANK W. WINCE

I expected that. I tried to see what you are fishing for here and I don't know of our group has really come down to one very definite spelled out policy on this.

The way I see it and from our group discussions when we arrived at our stand here, was that we feel that right now it is impossible to classify all of these estuaries at the present time. For one thing we don't know what the resources are in many of these areas. I think that we feel that when a certain area -- one estuary begins to develop or things look as if there is industry going to come in, whether it's going to develop as maybe a tourist recreation area, residential area, metropolis or strictly an industrial area, or a combination of the fishing, recreation, industry, residential, that at that time that the State of Alaska should have the capabilities -- the administrative set-up to classify a certain estuary at that time.

Maybe I feel that this should be done at the first indication that this area is going to develop. I believe that is probably the feeling of the group also.

MR. JOHN VLASTELICIA

Have they talked at all about whether it would be a single State agency responsible for such a thing, or whether it would be a coordinating committee and whether or not industries would be represented also and whether or not the Federal Government might be represented?

MR. FRANK W. WINCE

I don't think we got into that much detail. I got the feeling that the State should have some agency responsible for conducting this and I am sure that the feeling is that they would need the coordination -- the cooperation -- the information from industry, from other State agencies, Federal agencies and just many other agencies.

MR. E. K. DAY

Thank you very much. Next I'd like to call on Mr. Mike Colletta of the Colletta Corporation.

MR. MIKE COLLETTA

Mr. Day, Secretary Miller, members of the panel, ladies and gentlemen. I represent no one except myself as a private individual citizen. I have had occasion to be involved in one facit of pollution and I -- really my statements are rather in the form of questions which I am trying to seek an answer to. I would like, prior to saying anything further, ask the Chairman and the Secretary of State and the panel for the answer to one question. I have devoted my time since November of last year to the present time to establish from agency to agency, both intra-state and Federally-wise, who has control of pollution for oil contaminated waters in Alaska?

SECRETARY OF STATE MILLER

I think if we could all answer that with a pinpoint answer we probably wouldn't have to be here. But, speaking for the State only, I would say -- and this is a very, very recent development -- I would say basically if there was -- There is one responsible agency it is the Department of Natural Resources within the State and specifically its Commissioner.

MR. MIKE COLLETTA

Thank you. As I understand it then, would I be incorrect in assuming from your answering to my question that should I contact the Department of Natural Resources, they would be allowed to make a decision?

SECRETARY OF STATE MILLER

Yes. I am sure that's right.

MR. MIKE COLLETTA

No other State agency would countermand it, nor would the Federal agencies?

SECRETARY OF STATE MILLER

You have got me in a box. No. I couldn't say that. Naturally the Federal Government has certain say in these matters.

MR. MIKE COLLETTA

Well, the balance of my talk then, Secretary Miller, Mr. Day and panel members and ladies and gentlemen, again naturally has to do with and is based around this. Quite frequently we read that there are various villians in this

State who are contaminating my water. I consider myself a resident. I have been here fifteen years. I make my livlihood here. And I do and I must substantiate these people who have received derrogatory remarks continuously this past week. And incidentally, my remarks are fact. I can substantiate everything that I am going to say to any of you who might wish to see documented proof of this.

I have had occasion to deal with the micro-dispersant that has been -- or had extensive research performed on it by the Battelle Memorial Institute, John Hopkins University, and the oil industry in Alaska has readily accepted me-being a small individual. This was of no consequence. These people were -- there was something that possibly might alleviate partially -- not totally -- just partially -- minutely a part of the oil contamination situation, if and when it arises. And we can't get any concurrence from any Department. I am addressing my talk primarily to you, Secretary Miller,as the Governor's representative. Possibly we can get an answer or at least one citizen satisfied that something other than organizations of this type -- which are good -- some actual factual things being done. Like even if we only saved one-tenth of one percent of these fish. Concede, you know, we kill ninety-nine percent of them. The oil would have gotten them anyway. That one-tenth of one percent is better than nothing. But, these people expounded on recent accidents and along with these accidents, I think it would be extremely well to remember that their prime interest in digging these holes is to take this oil out. Not to throw it on that water. So they want to keep it. They want to keep it worse than we want to get it off of the water. They expend a great amount of money. And we ran into inter-agency squabbles.

SECRETARY OF STATE MILLER

You are speaking of the State?

MR. MIKE COLLETTA

The State and Federally. We received concurrence from one State agency. It was revolked by another State agency. And this went on all day at a considerable expense. I would conservatively estimate that to chauffeur me around -- to charter aircraft -- to take a fair sized boat down here, that they must have expended in the neighborhood of seven to ten thousand dollars and that was just for me. This has nothing to do with their shutdown and the use of their own personnel.

The attempt is being made and I believe that the State and the Federal agencies should solicit or accept the help of private industry. This type of research is costing none of us any money, because your research is out of my tax dollar and if these companies wish to do this, then this is gratis.

And somewhere along the line a standard of irreputability must be concurred upon. Is Batel reputable? Is John Hopkins University reputable. Three or four different people coordinate and work on one problem with the final result to one person without each of them questioning what the other did.

Now, did you do your end of it correctly? Are you sure that this bolt fits in this hole?

SECRETARY OF STATE MILLER

Well, I think you are speaking of what most of the other speakers mentioned, that there is a necessity for one single coordinating and determining agency in all pollution matters. I can only speak for the State naturally. The Federal Water Pollution Control Administration has certain controls over the State's conduct in these matters and I think what most everyone has been saying is there should be one single agency, either within the State or within the Federal Government to funnel all of these matters through. This is not the case at the present time.

MR. MIKE COLLETTA

True. Well, that concludes my remarks.

MR. E. K. DAY

Thank you, Mr. Colletta. Any questions?

MR. T. A. WASTLER

Possibly one comment maybe in our defense. Maybe not.

There was an oil -- bad oil spill off Puerto Rico about three or four months ago and in part of the efforts to clean this one up we tested a large number of proprietary products for the purpose of cleaning up oil after it is spilled. I just want you to know that we are soliciting products and assistance from anyone on chemical and efficient ways to clean up oil spills. Not only that, we are also trying to figure out how to prevent them.

MR. MIKE COLLETTA

Mr. Day, may I have the floor again, please?

MR. E. K. DAY

Certainly, Mr. Colletta.

MR. MIKE COLLETTA

I would like to answer this gentleman's comment. This also is evidence in the form that I was talking about that we can substantiate. Now, the Coast Guard on the Eagle spill in Puerto Rico did fly ten thousand gallons of this particular dispersant for use there. They issued a favorable comment on the effects of it and, of course, another agency will turn this around right now. There is just no cooperation between each agency.

MR. E. K. DAY

Any other questions from the panel? We'll then call on Mr. Steve Pavish representing the Izaak Walton League.

MR. STEVE PAVISH

Chairman Day, Secretary Miller, members of the panel, I have a prepared statement here that represents the opinions of the Izaak Walton League, Anchorage Chapter.

Since the members of the Izaak Walton League are firmly dedicated to the intelligent use of natural resources and to the greater preservation of the natural environment, we approach all conservation problems with an eye for the values of aesthetics, the needs of wildlife, and the needs of future generations as well as an awareness of contemporary human economics. We are, in other words, cognizant of the socio-economic requirements of this century, but focus our attention on planning for the future.

As an organization we believe that the maintenance of a stable natural environment and consideration for the needs of future generations should sometimes take precedent over contemporary human desires. For these reasons our proposals for the management of Alaska's estuarine resources calls for what may seem some excessive caution, but we feel the complex, delicate nature of the coastal environment warrants such steps.

To say that estuarine resources are of great value to a state with over 33,000 miles of coastline would be gross understatement. The greatest proportion of Alaska's income is derived from economic activities along our coasts. Petroleum production, commercial fishing and lumber and pulp production are all predomenantly coastal industries in Alaska. Besides attracting industry to the State, our estuarine areas draw thousands of tourists who leave behind an estimated forty-five millon dollars annually to boost Alaska's economy. Coastal Alaska is also the area where most residents prefer to live, since nearly nine out of every ten Alaskans live within fifteen miles of tidewater. Our coasts also provide a rich habitat for abundant wildlife and thus act as vast sanctuaries for wild animals, birds and plants at a time when wildlife is diminishing in most of the world.

There is little doubt, then, that Alaska's coastal areas are of immense value, both to the State itself and the world. However, our estuarine resources are not always treated in due respect to their worth.

Virtually every city on tidewater in the State dumps its sewage wastes into the sea with no prior treatment whatsoever. Raw sewage pours into Alaskan bays, inlets and even boat harbors at a rate of over eight million gallons per day. Seemingly, the majority of Alaskans aren't concerned with this situation. After all, it is a big ocean. But, oceans, like rivers and lakes, have a tendancy to shrink with use, as the Eastern seaboard states are beginning to discover.

The threat of oil pollution has received a great deal of attention in Alaska and the State Government has handled the job of establishing regulations and safeguards against it very well.. Continued efforts along these lines are expected and we hope at sometime in the future that some coordinated plan can be established for the protection of water from oil pollution and also for the protection of the oil resource from wasteage.

In Southeastern Alaska, particularly, there is a relatively serious problem developing in bays adjacent to logging operations. At the present time there seems to be a lack of sufficient regulations to prevent the clear-cutting of timber along streams. If there are regulations, they are being ignored. The result of the clear-cutting in watersheds is an increase in the number of silt-laden streams.

Salmon returning to these streams to spawn are met by clouded water in the bays which confuses many fish and prevents them from reaching their spawning sites. The spawning beds themselves become muddied with silt and are rendered unsuitable for the incoming female fish which deposit their eggs only in the gravel beds of clear streams.

To our knowledge this type of pollution caused by excessive runoff is not covered in the statutes of "The Clean Water Restoration Act of 1966." If this is the case, the situation deserves the close attention of the Estuarine Pollution Study Organization.

As an organization, we are not largely in favor of the expansion of Federal Government control. However, we feel that, in the case of a resource as extensive as America's estuaries, uniform codes for its management which transcend state boundaries must be established. We therefore recommend that pollution control in estuarine areas be established at the Federal level along the lines presently followed in fresh water pollution abatement.

In other words, the Federal Government provides information, we'll set the standards and the States will carry out their own enforcement.

In reference to particular types of regulations which we favor, I offer the following list:

1. That no city, country, borough, sewer district, or military installation having a population of over 1,000 persons be permitted to empty sewage into tidewater without first subjecting it to treatment deemed acceptable for freshwater by "The Clean Water Restoration Act of 1966."

2. And further, that no industrial complex of any kind be permitted to empty untreated waste products into tidewater until they are treated under acceptable processes as covered by the same Act.

3. That no community or other settlement regardless of size be permitted to dump garbage or other refuse into tidewater or on beaches adjacent to tidewater.

4. That activities which lead to the unnatural silting of streams, especially those used by salmon and other migratory fishes for spawning areas, be regulated such that normal runoff will be maintained and silting held to an absolute minimum.

Finally, we would like to express the hope that all decisions regarding the Estuarine Pollution problem will be made in favor of maintaining the natural stability of the coastal environment, rather than in favor of short term economic gains. Only in this way can the fruitful future of our children be assured.

In behalf of the Anchorage Chapter of the Izaak Walton League of America, I wish to thank the cooperating State and Federal agencies which organized these hearings for the opportunity to express our views.

MR. E. K. DAY

Thank you very much. Any questions from the panel? I have a card indicating three other statements to be given. I would like to point out that these -- I understand that these same statements were given in the meeting in Juneau on Tuesday evening and because of this will be included as a part of the meeting record. I don't want to deprive these people of the privilege of making the statement here if they wish, but before doing that I would like to ask if there is anyone else in the audience who has not indicated their desire to make a statement, but would like to make one at this time. We'd be glad to hear from anyone. Yes. You have a statement to make? Fine. Your name, please?

MR. ED BARBER

Dr. Day, Secretary of State Miller, members of the panel, my name is Ed Barber. I am Secretary-Treasurer of the Cook Inlet Fisherman's Association, their legislative representative for the past six years in June and very much interested in pollution with respect to Cook Inlet.

We as fishermen are not primarily interested in the aesthetic elimination of pollution with respect to Cook Inlet and especially with respect to our fishing industry.

The Anchorage area and Cook Inlet has historically been the guinea pig of Alaska and with respect to pollution itself, again that same guinea pig.

Many years ago I had a hand in the Chester Creek outfall sewer, a project destined for the benefit of the whole area and very much in the future. At the present time that outfall sewer is dumping sewage at a very large rate into Cook Inlet and it has since been supplemented by anyone of a number of outfall sewers. Some of them of nearly as great a capacity.

We as fishermen on Cook Inlet learned some six years ago the necessity of the multiple-use concept of our natural resources, especially with respect to Cook Inlet, and by that I mean, with respect to the oil industry. Now, before the oil industry came here we at that time were considering the necessity of legislation in connection with the use of detergents in the City of Anchorage water sewage elimination. We were not primarily interested in the sewage, mind you. We were interested in the detergents and no one to our satisfaction could tell us the effect of these detergents in Cook Inlet on the salmon industry.

Alaska, I am told, has only a third of the coastline of the United States. It's always been my premise that we have as much or more than the entire continental United States. And when you contemplate an area in that length with that many estuaries and that many estuary problems, we really have something to contemplate in the State of Alaska.

Now, I have heard about the millions of gallons per day going into the Inlet. And I also heard about the millions of gallons going into the ground and may I say at this time that we, as fishermen, get it all. We get it initally right out of the Chester Creek outfall sewer or out of Ship Creek, Chester Creek, Campbell Creek, due to the effluent coming out of all the cesspools of this area.

Now, we have heard about the pollution of the gold mining industry. We have also heard a remark said that there should be a definition possibly, or maybe not possibly, between the estuarian high tide line and the streams above. Believe me the spawning beds of the salmon industry in the State of Alaska are just as important in the streams as the estuarian tributaries of Cook Inlet. Now, I have had a hand in the discussion concerning the Water Use Code which contemplated not only the use of the gold mining for the water, also the timber, but also the fish, and while none of us were satisfied with the final ultimate decision, we were sure that we got as much as we could reasonably expect without getting more than we should from the other.

Now, I don't believe that anyone here fails to realize the importance of the Cook Inlet watershed, especially with respect to the salmon industry. Now, we have a multi-million dollar industry here and we have learned to live with the oil industry and to a certain extent with the sewage. And I would like to point out the tremendous importance, not only to the Cook Inlet area and the City of Anchorage, but also the State of Alaska of this industry. Now, I am no scientist. I am no biologist. I am just nothing but a common commercial fisherman, but, believe me, the only thing I can do right here before you is to accent the importance of your considerations at this time. Now, take the Collier Chemical Plant on the Kenai River. Now, we'll say that that ammonia is of benefit to the fishing industry, but it likewise sets a precedent for dumping into Cook Inlet what could have otherwise been put into the ground. Maybe at a little bit of additional expense.

Now, we are not interested as fishermen in how this is accomplished. All we want to do is say to everyone here how important it is to us, how important it is for the Anchorage area and how important it is again to the State of Alaska, and mind you, what we do here today will some day be used in other estuaries -- estuarian parts of the State of Alaska.

Thank you.

MR. E. K. DAY

Thank you very much, Mr. Barber. Any questions from the panel? Mr. Barber, do you have a prepared statement?

MR. ED BARBER

No. That is just a few notes.

MR. E. K. DAY

Thank you. Are there any others in the audience who would like to make a statement?

MR. CHARLES EVANS

I realize I am treading on dangerous ground. Everybody is about ready to go. On the other hand, I represent the U. S. Bureau of Commercial Fisheries and we, along with the Alaska Department of Fish and Game, represent the considerable important industry and the number of resources of great importance -- perhaps some of the major resources in the estuaries. I'd like to impose on you people to the extent of reading a statement which was read at Juneau. On the other hand, I beg the indulgence of those who have heard it before and would like to proceed.

MR. E. K. DAY

Very fine. We didn't want to deprive you of the opportunity.

MR. CHARLES EVANS

The estuaries of Alaska present an unprecedented opportunity for man to demonstrate his ability to modify his environment but at the same time to live in harmony with it. In Alaska, the coastline is convoluted to an extent found in few other places on the North American continent. The resulting coastal environment is essential to the life cycles of many species and is of tremendous benefit to others, including man. It is essential that we exercise care and advance planning in our activities along this coastline so that from this valuable resource we not only realize a maximum of its industrial potential, but at the same time do minimal damage to the natural and aesthetic qualities of that environment.

An important natural function of the estuaries of Alaska is that they serve as nursery areas for many species of commercial and sport fish. For example, for several weeks after emergence from the spawning streams, pink salmon fry move in the meandering currents of the estuarine waters between freshwater spawning areas and the open sea. The young fry increase several fold in size during this period. During their migration through the coastal zone to the sea, the fry must consume many times their weight in food organisms. If the food organisms are abundantly available at the right times along the migration route, the fry will develop sufficiently to continue their seaward migration. All salmon must pass through an estuary at least twice during their lives -- going to the sea as juveniles and returning to freshwater spawning grounds as adults. There is good reason to believe that the number of fish returning as mature harvestable salmon is directly related to the number of healthy fry or smolts which successfully reach the open sea.

Less is known of the life cycles of herring, king crab, and shrimp, which are all known to use estuaries as nursery areas, but they too are dependent upon food in the estuaries for their survival.

Primary productivity of a body of water is the term used to describe its capability to produce phytoplankton, the microscopic plants which are the basis of the food chain and upon which salmon, herring, crab, shrimp and other marine animals are ultimately dependent. The many prerequisites for high productivity include the abundance of oxygen, nutrients, and sunlight in the waters, and the stability of water conditions. When productivity is high, phytoplankton are plentiful, and, in turn, much food is available for the organisms that feed on the phytoplankton.

Man, however, can and has often altered estuarine conditions to the extent that primary productivity has been considerably lessened or even curtailed entirely. He has altered flow patterns on a seasonal basis. He has made chemical changes. By log-ponding and by discoloring the water, he has even reduced the amount of sunlight that reaches the phytoplankton. Such drastic changes to the environment, and thus to the primary productivity, inevitably also decrease the populations of larger species.

The coastal zone of Alaska contains estuaries of outstanding value -- estuaries that not only support the world's most intensive and valuable salmon fishery, but that support other valuable fisheries as well and that sustain nearly the world's population of several species of waterfowl. Alaska's fisheries are the state's most valuable single industry, employing nearly thirty percent of her labor force. Freshwater and estuarine species alone have a value of about $100 million annually, roughly half of which goes to the fisherman. The State and the nation cannot affort to sacrifice existing food resources in Alaska's coastal zone through neglect, misuse, or hasty development of new industries. We can ill afford to destroy existing fish and wildlife resources which are renewable, in our eagerness to develop new industries.

Yet, Alaska already has found itself unable to cope with detrimental side effects from use of our estuaries. Cook Inlet is the hub of a burgeoning oil industry that is now looking toward the Gulf of Alaska and Bristol Bay. Unfortunately, however, the growth and progress of the oil industry in Cook Inlet has been marked by a series of reoccurring pollution incidents. There is little evidence that control efforts have had significant effect on reducing the total rate of these occurrences. Just last week another two hundred barrels of oil escaped into the inlet. Fortunately it did not occur in an area of intense fishing activity nor were there large concentrations of waterfowl in the immediate area. We cannot, however, continue to depend on our good fortune. There have already been a number of oil pollution incidents in Cook Inlet that, had they occurred in Bristol Bay or the Alaska Peninsula area during peak of the salmon or waterfowl migrations may well have made the Torrey Canyon disaster seem insignificant in terms of loss of fishing gear, marine life, and water birds. These are the kind of losses that we could quantify. We cannot yet accurately measure losses in terms of primary productivity and the far reaching effects of a disrupted food chain, nor can we put a unit of measure on aesthetic losses.

The latter, the aesthetic losses, have, generally speaking, received little consideration in the course of Alaska's development, although the social and economic value of preserving Alaska's coastal beauty is becoming more recognized. It makes little sense to develop a region at the expense of its livability, even though the most valuable resource, in the sense of being irreplaceable, may be biological productivity.

We in Alaska have a golden opportunity to avoid the tragic mistakes made in developing the lower 48 states, where little regard was given for maintaining the pure water resources and aesthetic beauty of our country.

We believe that industry, and community development can take place without the destruction of the existing biological and aesthetic values of the estuaries. Awareness of the wildlife and fish requirements, advance planning, and cooperation between developers and conservation managers is essential. It will require intensified effort on our own part to improve the state of our knowledge of estuaries and how they function. It will require greater effort, and no doubt considerable expense, on the part of those wishing to use the estuaries for development purposes to achieve compatibility with existing values -- but it can be done. It is not necessary to sacrifice these existing values to encourage the other uses in our coastal zone.

The most important factor in planning for the use and management of our estuaries must be a concern for the well being of all our people. In order to best serve them, we must learn to take greater cognizance of presently available knowledge of estuarine ecology. Existing state and municipal authorities should effect wise utilization and maintenance of estuarine values. At the same time, agencies which have this information should increase their efforts to make it more readily available to the authorities entrusted with making plans for estuarine utilization.

In order to insure that biologically productive and aesthetically valuable estuarine resources continue to exist, it may be necessary to assign priorities and costs in some other areas. This may mean added costs to consumers who derive the benefits from the resources. It may also mean that limited and controlled pollution of some estuaries must be tolerated in order to allow more complete protection of other aesthetically valuable and biologically productive areas. Increased knowledge, awareness, advance planning and cooperation are mandatory.

What we are talking about essentially is that classification is almost necessary before -- even before you truely understand the interrelationship in anyone individual estuary. Some sort of a rough division or separation of these estuaries into various types is a very basic beginning. It doesn't have to be the very last word, but just some way of getting started and this has to be done. Essentially, based on our experience, it has to be done before development gets started, because these are long term projects. You can build an industry in a matter of a few years, but to get the background of the effects of that industry on the environment may take considerably longer. And you can't wait. The industry isn't going to wait for you to conduct these studies. At least the background has to be there.

The Bureau of Commercial Fisheries takes the position that the following must be considered in an estuarine management program:

1. State and Federal and municipal planning should have long range goals.

2. Some estuaries must be set aside for aesthetic purposes.

3. Highly productive estuaries must be preserved in that condition by limiting pollution to whatever degree is necessary.

4. Because new industrial operations in estuaries may cause irreversible changes in their nature, extreme care must be exercised in the determination of their location.

5. Whenever estuaries are used for industrial purposes, provisions must be made for continuous review and monitoring of effects.

Thank you.

MR. E. K. DAY

Any questions from the panel? Thank you again. Mr. Joseph Blum, do you wish to repeat the statement that was made by Mr. Hilliker in Juneau or add to it?

MR. JOSEPH BLUM

I will add to it. It is five pages long and it is very hot in here. What I have to add may be simply semantics, but it appears to me what has been mentioned tonight and what was mentioned in Juneau is, everybody realizes the need for classification, for research and for planning, but what we feel, and possibly there is another word for classification, is that what should be done first is an inventory of what we have. We feel that before you can do an adequate job on the research or the planning or even the classification, you have to know what you have. What the current uses are. What is there and any problems that currently exist and potential problems. And then you can go in and classify.

This doesn't mean that research should sit back and wait entirely until this is all done -- or planning -- but from these hearings and from the eventual study which we hope is passed, we would like to see primary emphasis put on inventory of Alaska's estuaries. (Ed.Note: See Juneau Proceedings, Page 13)

MR. E. K. DAY

Thank you very much. Mr. Richard Britt of the Alaska State Department of Health and Welfare?

MR. RICHARD BRITT

Mr. Chairman, you had my position on Tuesday. Unless you think something would be gained by it, I would prefer not repeating it here. Since it is a part of the record, I will sign off at this point. (Ed. Note: See Juneau Proceedings, Page 59)

MR. JOHN VLASTELICIA

I have just one general question and if anybody would like to comment on it, I think we'd be very interested and it helpful to hear from someone on this. And that is, we have heard about classification tonight in many different forms and phases and water quality standards as such were not mentioned too much, although they were made and pleas were made for enforcement or implementation of water quality standards. But, the standards are a type of classification. In order to set the standards, the State, to the best of their ability, and on the basis of available knowledge primarily, they determined what the uses of some of these zones were or might be and the particular standards were then adopted to protect these uses. And does anybody have any feeling or comment how this classification system that we are talking about here tonight for Alaskan estuaries might either fit in with the standards or alter standards -- the classification system used for standards? Are we talking about a reevaluation or a resetting of the system used for standards? This has been proposed in other areas, but I wonder if anybody has any comment that they'd like to bring up?

MR. E. K. DAY

Mr. Dunslager?

MR. WILLIAM DUNSLAGER

I believe our pollution Water Quality Standards were developed on pollution perimeters primarily in warmer waters. We need development of our Standards based on future research along this line, generally speaking. The estuarian application of these Standards was a blanket deal. In other words, most of the estuaries were classed a particular class. Now, without individual consideration of estuaries, this blanket classification is erroneous, because some of the natural water is undisturbed by mankind and do not meet these Standards and, therefore, the individual classifications would merely be updating or applying these Standards.

MR. E. K. DAY

Any other comment on this?

MEMBER OF THE AUDIENCE

About the only comment that I would have is that, as I understand, the Standards would be a degree of the individual pollutant that would be permitted within anyone area -- the concentrations of it -- and the classification should be a classification of uses and users of an area and in that light they go hand in hand. One would supercede the other.

MR. E. K. DAY

Any other comments. One last chance for anyone else who might want to make a statement.

MR. T. A. WASTLER

I have a comment I'd like to make. We have heard several speakers comment on -- or state that parameters which apply in warmer climates do not apply in Alaska's estuaries.

We would be in a much more powerful position in any recommendations we might make with regard to this if we could have some examples -- some type of documentation to make the case. Just stating it is one thing. Giving us some documentation to demonstrate this would be very helpful indeed. An example I can think of, I think Alaska has the only glacier fed estuaries in the country, but -- but, if there are any reports or documentation to cover this, we would certainly appreciate having copies of it.

MR. E. K. DAY

I guess that about winds up the hearing. I would like to ask that any of you who have prepared statements and have not turned copies over to Mr. Jones, that they please do so. I would like to remind you that we still have fifteen days for anyone else who wishes to submit a statement.

I would like to express our appreciation to Alaska Methodist University for the use of their facilities here.

I would like to express our thanks to people from the State. Particularly to Secretary Miller for serving as co-chairman of the meetings here; Howard Grey for his participation and help in organizing the hearings, and to all of the other efforts on the part of the State people involved, and last, but not least, to each of you who have attended the meetings and prepared statements, which was the purpose of the meetings. If you wish to submit a prepared statement, send it to me at the Alaska Water Laboratory, College, Alaska.

Thank you all for coming tonight.

PART II

WRITTEN STATEMENTS

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Alaska Conservation Society
UPPER COOK INLET CHAPTER
P. O. Box 3395
Anchorage, Alaska 99501

May 30, 1968

Mr. Walter Wilson, Alaska Coordinator
National Estuarine Pollution Study
Alaska Water Laboratory
Federal Water Pollution Control Administration
College, Alaska 99701

Dear Sir:

The UPPER COOK INLET CHAPTER of the Alaska Conservation Society is, by very nature of its name, vitally concerned with the uses man is making of Cook Inlet and its contributing streams and surrounding lowlands.

These estuaries have provided natural resources, such as fish, waterbirds, and fur bearing animals (mink and otter), since time immemorial. Along Knik Arm shellfish once thrived, yet at the present time, they are found only in the lower part of the Inlet.

Another natural resource found under the Inlet is oil. We are concerned, not only by the devastating effect of pollution by oil cast upon the waters, but also by the sewage dumped into the waters by Anchorage, Kenai, Tyonek, and other communities, as well as the oil platforms off-shore in the Inlet.

Cook Inlet is a unique estuary, with great tidal range, fed by glacial streams, without much human population along its shores as yet. Too little is known about the effect of sediments brought into the Inlet by these glacial streams, which carry tremendous loads of silt, and by the effects of the huge tides on the sediments at the bottom.

Before uses of this estuary can be intelligently planned and regulated, we believe that more factual information is needed--for example:

What is the effect of oil on the bottom of the Inlet?

Is is absorbed by the silts?

Does it sink into the substrate?

Is it killing eggs? plankton?

Is it dispersed harmfully? beneficially?

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What is rate of sedimentation in the Inlet?

What effect will this have on the construction of bridges and causeways? on navigation? on shellfish?

What effect do tidal currents have on dispersal of material dumped into the Inlet? on construction of docks?

What is the effect of waste disposal by small industries, such as canneries, into the Inlet?

What has happened to streams which are increasingly used for water supply, such as Ship Creek, in Anchorage?

What is the effect of clearing land on adding to soil erosion into the Inlet?

What effect do these changes have on the animal and plant life in this estuary?

More knowledge is needed to determine the best use of our estuaries; and, while seeking this knowledge, efforts must be made on the parts of all governmental and private organizations to see that man does not disrupt conditions so that beneficial use of the waters, marshes, and surrounding lowlands is forever harmed.

Respectfully submitted,

s/ FREDERICK HADLEIGH WEST
President

IN REPLY REFER TO
7232.1 (910)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
State Office
555 Cordova Street
Anchorage, Alaska 99501

June 18, 1968

Dr. E. K. Day
Federal Water Pollution
Control Administration
Alaska Water Laboratory
Fairbanks, Alaska 99701

Dear Dr. Day:

We appreciated receiving your notice on the hearings of the National Estuarine Pollution Study and we would like to make the following points which are relative to the Bureau of Land Management's jurisdiction and position in regards to estuaries and coastal waters.

BLM has responsibility for management of 275,000,000 acres of public lands in the State of Alaska. This acreage includes considerable coast line. These lands and the resources they produce are not only of value to the people of Alaska, but have an impact on our national economy. Many of the ducks reared in the Kuskokwim-Yukon Delta region are taken along principal flyways further south.

These coastal waters and the shore zone is the food source for many native villages and the dependency of people on the produce from this area should be recognized.

While the jurisdiction of BLM is primarily limited to the upland watersheds, there is a direct relationship between upland watershed conditions and water quality. An example is the Chesapeake Bay situation where siltation derived from soils eroded from uplands has materially affected oyster beds.

While the acreage of arable land is small in Alaska in relation to the size of the state, it could possibly have an impact. Not to be neglected is the erosion and debris movement into water following wildfires which burn off the forest and tundra cover. During a normal year, this may amount to several 100,000 acres.

The BLM's interest is to see that this relationship is recognized and included in any study.

We think there is real opportunity to plan for the use land resources, thus insuring proper management and eliminating the need for costly rehabilitation measures sometime in the future.

Sincerely yours,

Burton W. Silcock
State Director

APPENDICES

ATTENDANCE REGISTRATION

NATIONAL ESTUARINE POLLUTION STUDY PUBLIC MEETING

Juneau, Alaska - June 11, 1968

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